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THE POSTGRADUATE AND GRADUATE TEACHING OF RADIOLOGY *

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Radiology is still a comparatively new branch of medicine, but its rapid development during the last thirty-five years, and especially during the last ten years, is deservedly attracting widespread attention. Moreover, its relations to many other phases of medicine are increasing day by day. In several phases of medical practice, in fact, radiology has already become an indispensable factor. Such evolution has been so rapid that, although many of the better medical schools provide more or less substantial instruction for undergraduates, little effort has yet been made to organize and provide thorough postgraduate or graduate courses. In this respect America has allowed itself to fall behind several European countries. In England, France and Sweden, for instance, the teaching of radiology is well organized and has been placed on a higher plane than in any school in this country. This deficiency is now crying for correction.

Any consideration of postgraduate and graduate instruction in medical radiology must take into account a number of factors: the present status of the subject as it affects, and is affected by, other phases of medical practice; the existing plane of undergraduate teaching of radiology; the number of qualified teachers available, and the objects which an ideal system of instruction should seek to attain. It must be obvious that, without an ideal to strive for or a definite objective to attain, it would be difficult or impossible to construct a plan that could be expected to yield the desired result. In other words, the first essential is to know what is the desired result and to keep it clearly in mind. The main object of postgraduate instruction in radiology, it seems to me, should be to develop full-fledged specialists in this branch of medicine, masters of the subject, thoroughly equipped to practice the specialty, and worthy of public confidence. This, then, should be the ideal toward which we should strive. But before constructing a plan to achieve this result, it is important to inquire into the present status of radiologic practice. In a recent analysis I [1] have attempted to point out some of the undesirable conditions that characterize such practice at the present time, such as the comparatively low standards that countenance the reference of patients by their attending physicians to so-called laboratories operated on a commercial basis by unqualified laymen, the dependence of many physicians on interpretations of roentgenologic data by nonmedical technicians, the treatment of patients by technicians without supervision by medically trained therapeutic radiologists, and the dearth of teachers of academic caliber. These different factors are so closely interrelated that to analyze and set forth precisely the influence of each factor is not a simple task. Nor is such exact distinction necessary. It is quite enough to know that these factors collectively constitute a sort of vicious circle. The one point at which this circle can be most effectively broken is that which relates to postgraduate instruction, because the present lack of such instruction furnishes the best opportunity for constructive action. It is true that the break is rendered difficult by the relative paucity of teachers, but the number of teachers can be increased only by such a break.

Besides developing full-fledged specialists, however, the scheme of instruction should also include short courses in the different phases of diagnostic and therapeutic radiology. This would satisfy a widespread demand, would spread the knowledge of advanced methods, and would tend to raise the general level of radiologic practice.

A well considered scheme of instruction, therefore, should provide:

1. Short, strictly postgraduate, courses in different phases of diagnostic and therapeutic radiology for graduate physicians who may merely wish to keep informed on the value of various new methods or to prepare themselves to utilize one or another phase of radiology, and also for radiologists who may want to keep abreast of the newer technical developments and methods.

2. A comprehensive, graduate course of systematic and thorough instruction in every phase of radiology for physicians who desire to qualify as specialists.

The short courses should be open to any graduate physician, regardless of the character of his practice. This suggestion will no doubt be objected to by some, who may feel that to allow any physician to take such courses must result in encouraging physicians in general to conduct roentgenologic procedures or radiotherapy for themselves and in restricting the field of the radiologic specialist. This objection, I am convinced, is not strong. Although it must be conceded that the broad privilege of taking short courses would undoubtedly lead an increasing number of physicians to interest themselves in radiology and perhaps to employ it in their own work, I feel certain that, instead of limiting the field of the specialist, it would extend it. The more widespread the realization of the usefulness of different phases of radiology, the greater the likelihood that the real value of highly qualified specialists will receive the recognition it deserves. Certainly, it cannot be said that the short postgraduate courses in ophthalmology have lowered the level of ophthalmologic practice as a

* From the Section on Therapeutic Radiology, Mayo Clinic.
* Read before the Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 16, 1932.

1. Desjardins, A. U.: The Status of Radiology, J. A. M. A. **96**: 1749-1753 (May 23) 1931.

whole; on the contrary, it has led an increasing number of physicians to recognize the importance of high grade ophthalmology, and the status of this branch of medicine has risen as the number of qualified specialists has increased. To be sure, it would be fallacious to assume that this achievement has resulted from the provision of short postgraduate courses; the point is that such short courses do not appear to have acted as a deterring factor, and there are reasons for thinking that they have had an opposite effect. Therefore, the fear that short courses of instruction in radiology for graduate physicians may interfere with the general program of placing the postgraduate teaching and practice of radiology on a higher plane seems unwarranted.

Among the subjects in which short courses might well be provided are:

Physics of roentgen rays.
Physics of radium.
The quantitative and qualitative measurement of roentgen rays and radium.
Roentgenologic technic.
Roentgenologic interpretation.
Roentgenologic diagnosis of diseases of bones and joints.
Roentgenologic diagnosis of diseases of the respiratory tract.
Roentgenologic diagnosis of diseases of the gastro-intestinal tract.
Roentgenologic diagnosis of diseases of the urinary tract.
Roentgenologic localization of foreign bodies.
The newer methods of roentgenologic diagnosis.
The biologic principles of radiotherapy.
The technic of roentgen therapy.
The technic of radium therapy.

Physicians taking such courses should be entitled only to a certificate of attendance and should not be required to pass any examination, unless the number of short courses taken is sufficient to enable them to qualify as specialists. In this event, they should be allowed to take a comprehensive examination, and, if they succeed in passing it, they should be entitled to a certificate and to the title of specialist. The courses should be arranged so as to crowd as much information as possible in the time allowed and should consist of both didactic and laboratory exercises or practical work. The aim of the lectures should be to set forth principles and to explain their application, so that those who take such courses may be able to solve their own problems by analyzing the factors involved and applying fundamental laws. Neither didactic nor practical instruction alone can serve the purpose. Laboratory exercises should be chiefly in the form of demonstrations, because to expect the average short-course student to derive much information from being allowed to fuss and stew in a laboratory for two hours a day for six weeks would be likely to prove a delusion. Often it would only serve to waste the time of the student and of the instructor. In general, a well conducted demonstration would be much more effective. In certain courses, however, in which it is essential for the student to familiarize himself with technical procedures or with the operation of measuring or other instruments, individual practice under the supervision of the instructor is essential.

COMPREHENSIVE GRADUATE COURSE

The comprehensive course leading to a degree such as that of Master of Science in Radiology or Doctor of Radiology should be conceived along the broadest possible lines. It is difficult to see how anything like a thorough course of instruction can be compressed into less than three years. Any attempt to effect undue compression must necessarily result in sacrificing thoroughness and, therefore, quality.

To insure that candidates may be able to take full advantage of the course, they should be subjected to reasonably rigid requirements, as far as antecedent instruction or training is concerned. The privilege of registration should be restricted to graduates of class A schools and preference in selection should be given, or selection should be limited, to those who have had, as part of their premedical training, college courses in physics and biology or their equivalent. An internship of at least one year in a class A hospital should also be required as a preliminary to registration.

The first year of the graduate course should be devoted to anatomy, physiology and pathology and to the physical aspects of radiology. One half year of concentrated training in anatomy, physiology, pathologic anatomy (otherwise known as gross pathology) and microscopic pathology would provide the strongest possible foundation for both roentgenologic diagnosis and radiotherapy. A radiologist cannot possibly have too much knowledge of anatomy and pathology. Ability in roentgenologic interpretation depends in about equal measure on knowledge of anatomy and pathology, and these subjects are about equally important for roentgen and radium therapy. To meet the needs of roentgenologic diagnosis, instruction in anatomy should lay particular stress on landmarks and relations of special importance in roentgenology and on the developmental phases of bones. Physiology should be taught chiefly in the form of a review, but special attention should be given to the more significant radiologic considerations.

The second half of the first year should be given over to radiologic physics, instruction in which should include both didactic lectures and laboratory exercises. The lectures or conferences should be as practical as possible and should be planned so as to explain and demonstrate physical principles as they apply to different phases of radiology. As much as may be feasible, examples should be selected from material related to that subject, and demonstrations should be arranged in the same way. The object of the laboratory exercises should be to serve as additional demonstration of principles, to explain the construction and operation of apparatus, and to familiarize the student with physical methods and instruments for measuring electrical potential and resistance, the quality and quantity of roentgen rays, and all other measurable factors that enter into the scientific practice of radiology.

The second year should be fully taken up by diagnostic roentgenology. Not only should the students be taught how to interpret roentgenograms, but they should be required to spend a good part of their time in performing, under the guidance and supervision of qualified instructors, the numerous technical procedures incidental to the present-day practice of diagnostic roentgenology. To watch some one else and to do things oneself are two quite different things. The one may be a useful preliminary to the other, but in no way can the former be regarded as a substitute for the latter. One who has not become thoroughly familiar with every step of a procedure by actual experience can never be in a position to direct subordinates intelligently. By every possible means, therefore, students should be induced to regard themselves as working members of the department in which they are receiving instruction and should be made to feel some measure of responsibility for whatever work they may be

engaged in. This is the only way by which any one can expect to become really proficient. Roentgenography and roentgenoscopy have become so important that familiarity with every phase of their utilization in the diagnosis of diseases of bones and joints, of the digestive, respiratory and urinary tracts, of the nervous system, and also for the recognition and localization of foreign bodies, requires a detailed knowledge of many methods and of the variations in technic by means of which maximal information can be elicited under different circumstances. To become proficient in every detail of roentgenologic diagnosis in one year does not allow any time for frivolity. The question is, is one year really sufficient? Certainly, it can be accomplished only by careful planning and correlation and by the utmost economy of time.

Perhaps the foregoing results can best be achieved by arranging for the students to concentrate their attention, for periods of two or three months, on the roentgenologic procedures involved in the diagnosis of lesions affecting each of the groups of structures or organs previously mentioned. However, a fixed schedule is out of the question, because considerable latitude must be allowed in adjusting the details of the scheme of instruction to the circumstances of the institution in which the course is given. Besides instruction and practical training in roentgenography and roentgenoscopy, the students should be taught the photographic and chemical aspects of roentgenography and the methods of protection required for the safe practice of radiology.

Throughout this part of the course it is desirable that contact with clinical medicine and surgery be maintained. In some institutions the diagnostic roentgenologist may be obliged to work with little knowledge of the clinical features of the cases examined. At best, this is to be regarded as an unfortunate necessity, but never should it be looked on as an ideal. On the contrary, the closer the relations between medical or surgical clinicians and the roentgenologist, and the more knowledge the latter may have concerning the cases he examines, the more valuable should be his opinion.

The third year should be given over to therapeutic radiology, including roentgen rays, radium and, if possible, ultraviolet radiation. The field of radiotherapy, once so restricted, is now rapidly extending, and every radiologist worthy of the name should receive as broad and as thorough training in the therapeutic as in the diagnostic aspect of this branch of medicine. The conspicuous and widespread lack of such training, and of the clinical and pathologic foundations on which it rests, are among the most glaring deficiencies of present-day American medicine. Owing to the general neglect of this phase of the subject, but chiefly because of the lack of qualified instructors, few institutions are now in position to undertake such teaching. If this deficiency is to be corrected, a beginning must be made. For a time it may even be necessary for two or more institutions to pool their facilities and personnel.

Students should be required to take an active part in the examination of patients, in outlining their treatment and in preparing patients for irradiation, as well as in the actual administration of the treatment. It should be quite feasible to arrange the work so that, without any transfer of responsibility from those on whom the professional and legal obligations actually devolve, the students may yet have an appreciable share in all phases of such treatment. Only through some such scheme can they be made to realize the significance of many details, careful consideration of which and attention to which spell the difference between superior and inferior treatment. Too often the medical side of radiotherapy is neglected and the physical aspects are overemphasized. Both should receive due consideration. Important as it is to know the quantity and quality of radiation most useful in dealing with different pathologic conditions, it is even more important to be able to recognize the disease at different stages, to ascertain the extent of the primary lesion and of secondary foci, to size up the general state of the patient, and to adjust the treatment accordingly. Needless to say, the instruction in therapeutic radiology must be delegated to instructors of broad medical and radiologic experience. It may be contended that the general clinical, pathologic, dermatologic, surgical, gynecologic and other aspects of radiotherapy should be presented by specialists in the respective branches. But considerable difficulty may be encountered in finding specialists who have had sufficient experience with the radiologic aspects of their subject to qualify them for the task. To mention another example, few pathologists, and only a slightly greater number of practicing radiologists, know much about the relative radiosensitiveness of different varieties of cells and tissues. To be sure, the subject is still comparatively new, but, unless a start is made, such knowledge as we possess will be slow to diffuse.

On the whole, the most feasible arrangement at the outset will probably be to delegate the general teaching of the subject to the most experienced and the best informed therapeutic radiologist available. He, in turn, should arrange to have those phases of the subject with which he is not sufficiently familiar presented by qualified specialists. The strictly radiologic teaching should be supplemented by lectures on related aspects of clinical medicine, surgery and dermatology. Here again the need of combined didactic and practical teaching must be emphasized. This can be accomplished by means of lectures, but another effective, supplementary method is that of conferences or seminars at which certain of the students present a general review of some phase of the subject, which is then discussed by the instructor and by the other students.

The scope of roentgen therapy is distinctly broader than that of radium therapy, in that a wider variety of cutaneous, inflammatory and neoplastic diseases are amenable to treatment with roentgen rays than with radium. It must not be inferred, however, that the former subject should be allowed a greater proportion of time than the latter. An approximately equal period should be allotted to the two subjects. The therapeutic use of radium involves physical, clinical and often surgical considerations, in which adequate knowledge, experience and judgment cannot be acquired hurriedly.

The program which I have ventured to outline would not be complete without the additional condition that, as part of his training, each graduate student should be required to undertake a piece of research on some phase of diagnostic or therapeutic radiology and to prepare a report or thesis based on such work. It is true that some, who may be brilliant in the practical aspects of radiology, may not shine as investigators. The value of the research requirement does not lie so much in the actual results obtained as in making the student realize the importance of careful work and in the discipline which may cause him to realize that, even after an extensive course of study, he does not know everything.

I am aware that such a sketchy outline may be unsatisfactory and that some would undoubtedly prefer a more detailed plan. I have deliberately avoided this, however, because the conditions at each institution, and the personnel and facilities available, vary so much that the details of any scheme of instruction must be worked out by those who are familiar with the requirements on the one hand and with the local conditions on the other.

THE TEACHING OF RADIOLOGY TO INTERNS *

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The average physician cannot boast of great familiarity with the conduct or interpretation of roentgen examinations, or of adequate comprehension of the possibilities of diagnostic aid to be obtained from x-ray studies. His contact with x-ray problems consists in the main of emergency cases in which fractures or dislocations are suspected, and occasional reference of cases to x-ray laboratories for a "picture" of the lungs, stomach or urinary tract. He has not appreciated that, in addition to skeletal diseases and injuries, roentgen studies may be applied with advantage to nearly all visceral disorders, including many diseases of the nervous system. He does not stop to realize that examination with the x-rays is much more complicated than the simple taking of a "picture"; that it is really no more a simple laboratory procedure than an ophthalmic examination or a urinary tract examination or a gynecologic study, and that a clinical knowledge of the conditions entering into his problems is a necessary part of the preparation of the radiologist. The "picture" of the stomach turns out to comprise a careful fluoroscopic investigation supplemented by anywhere from three to a dozen or more roentgenograms in various positions and under various circumstances according to the individual case. The "picture" of the lungs proves to be much more involved, the patient requiring fluoroscopic study in the erect position at various angles, with films to record whatever may be questionable or of especial interest; and sometimes it is advisable to make a screen study of the patient in the horizontal, prone, supine or lateral position, and to record the results with the necessary films. All of which sounds, and in actuality is, much more complicated than the simple word "picture" would imply, and yet to the layman who hears the x-ray study spoken of as a "picture," the physician's use of this term only serves to strengthen his impression that a roentgen examination is nothing more than some sort of glorified photography.

The remedy lies in some measure in the widening of the horizon of the general practitioner in relation to x-ray matters by having the radiologists of the country enter into a campaign of education through staff meetings, county society and other medical meetings. To a certain degree, perhaps as rapidly as possible, this is being carried on at the present time; but the logical and most important step is to carry this education to the young graduates of medical schools while they are in their intern year.

Medical students receive a certain amount of instruction in radiology, mostly in connection with x-ray investigations made in relation to the various patients with whom they come in contact during their clerkships and clinics. In addition, most medical school curriculums now include required didactic courses in roentgenology, usually in the senior year, and in many there are well trained roentgenologists who carry on excellent systematic courses of lectures and demonstrations to the students during both the junior and the senior years. Many schools make it possible for their students during their senior year to serve a clerkship in the x-ray department. Thus, when the graduate of today comes to the hospital as intern he already possesses a good foundation for further elaboration of his knowledge of roentgenology.

Statistical data from 619 hospitals approved for interns indicate that more than 80 per cent offer instruction in x-ray work. In some, provision is made for the rotation of the interns to include a brief service in the roentgen department, and in some of the larger hospitals there is a special x-ray internship. In others, occasional lectures are arranged to be given by the members of the staff of the roentgen department so that the interns may have more or less systematic instruction in roentgen diagnostics and therapy. In most hospitals, however, observation leads me to believe that the x-ray instruction given interns is desultory and not under definite check. The idea seems to be that the intern may absorb his knowledge of radiology while making rounds with the attending physicians and surgeons. In small institutions this is perhaps a necessary procedure, but in hospitals where the services of a trained roentgenologist are available it would be well for the interns to get from him also his slant on the meaning of the roentgen examination. The attending staff has a duty and a privilege in collating the roentgen observations with the other clinical and laboratory aspects of each case; whereas the roentgenologist, no matter how familiar he may be with the clinical and laboratory observations in a case, must not read into his roentgenologic interpretation more than can be supported by the x-ray evidence. It is well for him to know as much as possible about each case, the more the better, but he should not put into writing as a part of the x-ray report any statement which cannot be substantiated by the x-ray evidence.

PROGRAM OF INSTRUCTION

It is evidently quite necessary, if interns are to be given x-ray instruction, to formulate a definite program which can be followed out. Let me consider some of the things I believe it essential for an intern to learn about the x-rays. Naturally, the extent to which this ideal can be carried out depends on the size of the hospital.

1. *The nature and origin of x-rays and of secondary radiation, and the physical and biologic laws that apply to them.* This may be accomplished by reading textbooks, and it may have been done by some of the interns, but a systematic review should be made of the subject. Only by appreciating the physical facts will the intern ever learn to take care of himself and his patients during roentgenologic investigations and therapy. He should be taught the necessity of constant protection by lead-rubber aprons and gloves; to conduct roentgen examinations with expedition; to realize that proper filters must be kept in place between the source of the rays and the patient, whether for therapy or for examination, and that that most inexorable of laws, the inverse square law, applies to all radiation (including

* From the Northwestern University Medical School.
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radium and ultraviolet rays). He should learn that the patient becomes a potent source of secondary radiation against which protection must be provided.

2. *The scope of roentgen examinations.* In his daily work the intern learns the general applicability of the roentgen rays to diagnosis, but the refinements of x-ray diagnosis should be systematically brought to his attention by didactic work. There are conditions not encountered in daily work in which the average physician will not think of a roentgen examination; for instance, acute intestinal obstruction, subphrenic abscess, pulmonary and pleural abscesses, perirenal abscess, certain abdominal abscesses, the measurement of the size and the position of certain viscera such as the liver and spleen, and the application of opaque oils and other opaque mediums to the study of the sinuses and fistulas as well as certain organs into which such opaque oils may be introduced. The localization of foreign bodies is a field in which most physicians do not know (or else have forgotten) the value of the x-rays. Physicians with experience on the front during the war had brought home to them repeatedly the value of the x-rays in localizing foreign bodies of all kinds, special emphasis being placed on fluoroscopic methods; yet how few seem to remember at this short interval since the war the efficiency and the speed of the fluoroscopic methods of routine use in war hospitals during hostilities. Peace time studies have added nonopaque foreign bodies in the respiratory tract to the opaque foreign bodies detectable with the roentgen rays. Naturally the intern, even in his student days, became familiar with the scope of the roentgen study of the gastro-intestinal tract, the urinary tract, the lungs and bronchi, the heart and great vessels, and the skeletal injuries and diseases. It is important that in all autopsy and staff conference discussions the roentgen observations should be presented by the radiologic department and carefully correlated with the clinical and autopsy aspects of each case. It is a practice in one hospital, at least, to present at the autopsy room a roentgenogram of the chest, made post mortem, to bring further down to date the x-ray data on the thorax.

3. *Fluoroscopic control of the reduction of fractures and dislocations and in the removal of foreign bodies.* Some of the larger hospitals are equipped for biplane fluoroscopy for use during the setting of fractures and the reduction of dislocations, but the very accessibility of such apparatus may tend to relax one's vigilance against damage by the x-rays to the patient and staff. Every year new cases are brought to attention in which irreparable damage has resulted to physicians from injudicious fluoroscopy. When special apparatus is not provided for such work, improvisation can be made in the roentgen department or a portable x-ray instrument and a hand fluoroscope may be carried to the operating room, under which circumstances the dangers of damage by the x-rays to the staff is greatly increased, to say nothing of danger from possible explosion from unwise choice of anesthetic agent to use under such circumstances. These precautions are all the more important if it is sought to use the roentgen aid in the extraction of an opaque foreign body. Here again one seems to see very little effort to use the fluoroscopic aid so widely taught in military surgery. Time and again one sees surgeons attempting the removal of superficially located foreign bodies in the good light of the operating room when, by the aid of the fluoroscope and a proper technic of protection against surgical contamination and roentgen damage, the offending substance may be extracted with great saving of time and no danger from the x-rays.

4. *Roentgen interpretation.* To develop skill in reading roentgenograms and in translating the appearances made manifest by fluoroscopy there must be opportunity for observation of and participation in fluoroscopic and x-ray film examinations, and for sharing in the conference at which the roentgenologist puts together into the written report the x-ray evidence shown by films and screen. To make this of teaching value, it is important that the roentgen department be furnished with a statement of the problem in each case referred for examination. It is not enough to refer the patient merely for an examination of such and such part; the examination desired should be stated, but, most important of all, the problem should be stated clearly. The referring physician had some reason for sending the patient for examination in the roentgen department; what was that reason? A tentative diagnosis would be ideal, but practically it seems impossible to get the cooperation of staff members to that extent. It is possible to insist on knowing the question that was in the referring physician's mind when he wrote the requisition and he should take the time and trouble to state his problem briefly.

5. *Roentgen terminology.* Terminology is of importance in the instruction of interns. It is difficult to change the habits of a lifetime and, on the other hand, it is relatively easy to instruct young people just entering their practical experience. To a man who has all his life spoken of roentgen examinations as "having a picture taken," and who has been guilty of sending his patients into the x-ray department for an "x-ray picture of the gastro-intestinal tract," an "x-ray picture of the lungs," and of this, that and the other thing, it is useless to talk about terminology. But the younger men are susceptible to persuasion and rule in this matter, especially when reason is used in talking with them. There is a certain dignity which belongs to all branches of the medical profession, and it is well to maintain that dignity. The surgeon does not speak of making such and such a "gash" or "slash" to "dig out" the appendix; that would be exceedingly undignified. He makes such and such an "incision" to "resect" the appendix. One does not "dig out" the prostate through a low belly "slash"; he "enucleates" the prostatic tumor through a "suprapubic incision." Just so, in roentgen terminology it is possible with a little care to school oneself to dignified language and to speak of x-ray films, x-ray examination and x-ray study if one is determined that his tongue cannot negotiate the more cumbersome "roentgenogram" or "roentgen study." One of my dear friends protested that he could not curl his tongue around "roentgenogram," yet within two or three minutes he was talking about a nice case of urethral obstruction in which he performed a "ureteromeatotomy"! Proper terminology aids materially in the collection of fees that are necessary to carry on x-ray work adequately. The American Medical Association has published an acceptable list of radiologic terms.

6. *Therapy.* The field of roentgen therapy is so complicated that it is to be doubted whether more can be done in the way of instruction during the intern year than to teach the general principles of treatment, the selection of cases, the realization that it is possible to make accurate dosage, and the limitations of the method.

Circumstances will determine how far such a program can be carried out in the individual hospital. In large hospitals, with internships of from eighteen months to

two years, it is quite reasonable that a portion of this time be given to the roentgenologic department, each intern spending a while in that department as a participating assistant. Such a stay should be for not less than two months, and three would be better. The practice of assigning an intern to the x-ray department instead of a place on a rotating service should be condemned; no fellow in the roentgen department should be accepted until after having served his regular internship, and preferably after a few years of general practice. Failure to observe this precaution results in unbalanced training, which soon becomes evident in the practical work of the fellow.

In some hospitals the interpretation is done at the same time during which the members of the attending staff are making their rounds, so that it is difficult for the interns to participate in the reading of the roentgen examination. In such cases it is feasible to arrange a certain hour at the close of the forenoon or at the end of the day for revision of some of the more interesting of the x-ray cases of the day. It is also possible for the staff to arrange that the roentgenologist shall give a series of systematic lectures and demonstrations covering the x-ray instruction deemed necessary.

Much good will have been accomplished if the intern on leaving the hospital can carry with him a thorough appreciation of the scope and limitations of the roentgen examination in various disease conditions, its value and dangers in the control of fracture and foreign body work, and its place with radium in the treatment of many benign lesions as well as in the management of malignant disease.

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TEACHING OF RADIOLOGY TO UNDERGRADUATE STUDENTS *

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Radiology occupies rather a unique position as a subject for teaching to undergraduate medical students. It is a new medical specialty. Its diagnostic and therapeutic applications have grown at a tremendous rate and have become unusually widespread. While it is more or less intimately concerned in every branch of medicine, its development has been left largely in the hands of a comparatively few medical men, assisted in a great measure by physicists and manufacturers of equipment. Its development and its position as a specialty have been taken largely for granted by the greater part of the medical profession. Comparatively few students or recent graduates expect to take it up as a specialty or even to practice it directly in a smaller way, although it must serve all of them. For these reasons, little earnest thought has been given to radiology from the standpoint of undergraduate teaching, aside from the desire and pride on the part of radiologists to further the interests of their specialty. The latter attitude is but natural, for, as Barclay [1] states, "when a teacher is placed in charge of a special department, it must be his aim and object to further its interests."

* Read before the Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 16, 1932.

† From the Radiological Clinic of the Medical School of the University of Pennsylvania and the University Hospital, Philadelphia.

1. Barclay, A. E.: The Dangers of Specialization in Medicine, the thirteenth Silvanus Thompson Memorial Lecture, Brit. J. Radiol. 4: 60-82 (Feb.) 1931.

REASONS FOR TEACHING UNDERGRADUATES RADIOLOGY

While radiologic specialists are constantly urging their claims for teaching privileges, the question frequently arises no doubt in the minds of medical faculties as to why any extended instruction in radiology to undergraduates is necessary. This can be answered by numerous reasons, which, because of their multiplicity and complexity, require enumeration:

1. The intern and the comparatively inexperienced young physician should know something about a means of diagnosis and treatment which either must call on frequently for assistance. Perhaps this appeals to me more than it does to some of the younger generation because my student, intern and early medical experience was gained in the first years of roentgen diagnosis and treatment, when there was no teaching of any kind on the subject. Impressions of roentgenograms and the reasons for therapeutic actions and their effects were as vague as they possibly could be on any subject pertaining to medicine. When, as an intern, I was shown the roentgenogram of a chest, no mental impression whatever was made of the patient's condition because of an utter lack of knowledge of anatomy and pathology as they might be expressed by roentgenographic shadows and appearances. The intern of the present day, however, realizes something of the value of roentgenologic studies because he has been taught something about the subject. He has some understanding of normal and pathologic appearances when they are demonstrated to him. He even learns to interpret abnormalities for himself.

2. Today one seldom sees a clinical journal that does not contain important references to roentgen diagnosis or therapy. Must the intern or the young physician skip over these references without a proper understanding of them?

3. Roentgen diagnosis now is applicable to every branch or specialty in medicine. In surgery, every fracture and dislocation must be examined, not only because of the aid given to the surgeon and patient but also because of almost a legal requirement. The roentgenogram is the most satisfactory and safest means of diagnosing and studying bone diseases and tumors in most instances. Nearly all surgical gastro-intestinal lesions are diagnosed or confirmed by roentgenologic study. The detection or confirmation of a large number of urologic conditions depends on roentgenologic assistance, often aided by intravenous or retrograde urography. Diseases of the gallbladder, intracranial lesions, many intrathoracic conditions and a host of others require study by this method. In connection with internal medicine, the radiologist has to search for foci of infection in the teeth and sinuses. Practically all intrathoracic conditions require more or less roentgenologic study. The digestive tract and the gallbladder constitute a wide field for investigation. In addition, there are bone, joint, soft tissue and many other conditions for which examinations frequently must be made. The pediatrician frequently calls for assistance in examinations of the sinuses, mastoids, pharynx, chest and bones. The orthopedist would be lost without roentgenologic aid. The bronchoscopist could do but little without it. The laryngologist requires it constantly and the neurologist very frequently. Thus, radiology is practically a specialty within specialties.

4. The student should be taught the value of, and in many instances the absolute necessity for, roentgenologic diagnosis as well as its limitations, for he is

soon to become an intern. As such, he is in many instances the one to request roentgen examinations, until, perhaps, the radiologist has reason to mistrust his judgment and insists on a higher authority.

5. The student of today should be taught not to depend on roentgenologic aid at the expense of other and older diagnostic methods. He must learn to realize that such studies are expensive procedures for patients and institutions and should not be employed unnecessarily. On one occasion, an intern requested studies on a single patient in a ward which would have cost the institution over $70 had they been carried out. A large part of this general examination was found to be entirely unnecessary.

6. There is a tremendous amount of mediocre roentgenologic work being done today by untrained and inexperienced men, and much of it is practically valueless and even misleading. The student and, later, the intern should be taught to realize this, so that when they enter into practice they may be able to judge what is dependable and what is not. Nevertheless, one should not be too hasty in judgment of diagnostic ability on the basis of the appearance of roentgenograms, for they may have been made under unusual and difficult circumstances beyond control if poor, or, on the other hand, some men can produce excellent technical results without having the ability of correct interpretation.

7. To establish the fitness of the young practitioner for such judgment and understanding as have been specified requires that instruction of some kind should have been instituted during his student days, whereby he could have gained some knowledge of normal roentgenographic appearances, their variations within normal limits, and the modifications produced by pathologic processes. By the time of his graduation and the beginning of his internship he should be able to understand the principles of interpretation of living pathologic conditions in roentgenologic terms. The internship would then be the time for him to gain what is needed in the way of experience.

8. Roentgenology is largely but not entirely in the hands of the medical profession today. Whether it will eventually fall more and more into the hands of commercial enterprises outside of institutions depends almost entirely on the proper teaching of the younger members of the profession of the interrelation of radiology with the other branches or specialties of medicine. There is a growing tendency, apparently the world over, in the direction of commercialism, even with the vicious habit of fee splitting. Lack of oversight in this particular line of work only serves to encourage similar proclivities in others. Haenisch[2] of Hamburg, in a recent memorial address, when commenting on the misfortunes arising from the rapid expansion of radiology when it lacked the cooperation of other specialties, made the following statement:

> The harm, however, which resulted from a too rapid expansion of the art and the consequent faulty, insufficiently prepared training was not the worst. This could, if the will were present, be minimized or even eliminated. Much more disastrous was the fact that the incompetent and dishonest elements grasped this specialty. These, in some instances, were unscrupulous physicians who were guided merely by the expected pecuniary advantages and who, unhampered by clinical and roentgenological knowledge and experience, "sold x-ray pictures," paying the referring physician rebates or commissions. . . . In other instances laymen, with or without connivance of dishonest physicians, saw in the purchase of x-ray apparatus a get rich quick scheme at the expense of innocent patients.

These practices are all too common, and their elimination must be a cooperative process, and the warning and the education cannot come too early.

9. Radiation therapy has a large share of importance in the treatment of neoplastic disease and many other pathologic conditions. Today, operative surgery, electrothermic procedures and the use of roentgen rays and radium are the only approved methods of dealing with cancer, which is one of the most important conditions with which we have to deal in these modern medical times, because it is second in mortality rate among adult diseases. The greatest efforts are being made by interested medical bodies to teach the public and, still more important, the medical profession, the importance of early diagnosis and proper treatment. It is generally agreed by these bodies that the proper time to *begin* this instruction is in the undergraduate medical schools. The teaching is preferably to be carried out by cancer clinic groups, but in lieu of this it must emanate largely from the surgical, medical and radiologic groups. Many of the unethical and unscientific methods of treating cancer could not flourish to the extent to which they do today did they not receive encouragement from men who have not been properly taught. Irradiation is a part of the therapeutic armamentarium of the dermatologist, and the student should be able to understand why it is used on the basis of biologic effects.

10. The dangers from excessive x-ray exposure should be understood, especially as they may be experienced in roentgenography and fluoroscopy for various purposes. Radiologists are frequently embarassed by the lack of knowledge of these dangers on the part of the medical profession in general.

METHODS OF TEACHING

The reasons so far enumerated would seem to constitute ample justification for instruction in radiology during the undergraduate and intern periods. The latter is an ideal opportunity, but this aspect of the teaching problem will not be considered here. Fortunately, intern instruction is prescribed by medical boards in many states. My only suggestion in this connection is an insistence that the groundwork should begin during the undergraduate period. The next arguments are over the time, the place and the method. Barclay states: "It is quite true that the overburdening and consequent extension of the medical curriculum is due to the increase in specialization. . . . The student of today has a far greater load of learning to cram into his head than he had a few years back, far more than he can ever hope to remember." The method of general didactic class instruction in radiology as carried out in most institutions in the past has been a failure in many respects. It has certainly not accomplished the desired results, and the only service it fulfils is to give the class as a whole some idea of the scope of radiology, and this is not sufficient compensation for the time and effort. Didactic teaching by lectures to hitherto untaught students means in part the showing of series after series of roentgenograms or lantern slides representing pathologic conditions which the student sees with little or no understanding of their import. Even were he shown the normal first, he cannot correlate that appearance with the structures

2. Haenisch, G. F.: Roentgenology as a Specialty, the Caldwell Lecture, Am. J. Roentgenol. **26**: 821-833 (Dec.) 1931.

of the human body represented because he has never been taught to do so. The futility is realized when the teacher reads examination papers or asks even the most practical questions at the end of the period. A few exceptional students may have grasped the subject, but the large majority have not. Didactic lectures are better adapted to graduate students who have received sufficient ground work in the subject to enable them to absorb and assimilate that kind of instruction. Didactic teaching of radiology had its inception largely in the fact that no textbooks were procurable on the subject, whereas this method has gradually declined in other specialties as suitable collateral textbooks have become available.

Human psychology requires that the reasons for certain results must be explained if these results are to be understood and are to make any permanent impressions on memory. Hence, if the student knows why and how roentgenographic and fluoroscopic appearances are brought about or biologic effects are produced, his mind will be more receptive in the way of interpretation of shadows of the body structures and the indications for treatment by irradiation and the results obtained thereby. Therefore, in teaching radiology it is necessary to preface the practical aspect of the subject by a short course of instruction in physics. This must be didactic, but it should be made as elementary as possible and, at the same time, interesting. It should have been taught as a premedical subject, but this seems seldom to have been done, or, at least, not in a manner capable of impressing the students in a way a teacher of radiology would desire. The most appropriate time for it, or, at least, to review the necessary part of the subject of physics, if it must be included in the undergraduate medical curriculum, would seem to be during the first year. Then there is more time for it and it can precede any practical teaching. Surely the medical practitioner should know something about the physics pertaining to x-rays and radium and the physical problems involved in their application. It need be but a small percentage of what the radiologist must know and even make use of every day. The physician should be able to talk intelligently with his patients about what he orders for them, if nothing more. How many physicians know just why irradiation is used in cancer or the difference between radium and its emanation or the similarity in effects of roentgen rays and radium? The utter lack of knowledge by physicians of the most elementary facts concerning radiology is often ludicrous and, at times, even embarrassing to the radiologist. Their utter ignorance of nomenclature is all too apparent to editors of journals. The teaching of all the physics a student requires should take but a few hours.

In the teaching of radiology, all selfish motives of the radiologist should be excluded and he should formulate his plans in such a manner that the instruction may aid that of other subjects rather than take time away from them. Barclay says: "In teaching the radiological aspect of anatomy and physiology to men . . . I find that nearly all of them have forgotten these subjects to an astonishing extent. Surely there must be something radically wrong that this should be the case. I believe the trouble lies in the fact that these have become specialist subjects, taught by specialists, in departments that are separated from those in which the practice of medicine goes on." If this is true, as I believe it to be, at least to a considerable extent, is it not possible that the teaching of radiology might serve as a liaison between the clinical and the preclinical branches? As a matter of fact, such a purpose would seem to be a direct outcome of many proposed modern methods of teaching radiology.

When the internist presents a didactic or clinical lecture to his students, the latter have been prepared in anatomy, physiology, pathology, materia medica, applied therapeutics and physical diagnosis for a better understanding of the clinical subject under discussion. This progression of teaching has been worked out through long years of experience. Somewhat similar methods of progression would seem to be applicable to the teaching of radiology. Instead of a curriculum which prescribes a course consisting of a series of didactic lectures on the general subject, suppose we substitute one in which the roentgenologic aspect of anatomy, physiology and pathology in the living subject is considered in connection with the teaching of those branches and, later on, with the diagnosis of living pathology in the clinical branches.

One of the greatest misfortunes of the early radiologists was their enforced neglect of the study of the normal. When they started their work they were obliged to delve immediately into the abnormal without an adequate knowledge of what was normal. Fortunately this has been realized and has been corrected to a great extent, but not entirely. Inadequately trained individuals are often prone to interpret normal variations as evidences of disease because of their lack of knowledge of roentgenologic anatomy, physiology and pathology. One of the most flagrant examples of this was the one time popular peribronchial tuberculosis. Unfortunately, too many of us were culpable in this error. Unfortunately, the assertions of insufficiently trained radiologists have been accepted by unsuspecting clinicians who did not realize the absolute necessity for a proper anatomic and pathologic knowledge in roentgenographic interpretation. As a result, men by the wholesale were kept out or put out of the military services or were granted undeserved compensation because of alleged tuberculosis without any true pathologic basis in roentgenograms. The radiologists of the future must be properly trained on the basis of our experiences of the past. Why should not the proper form of instruction be given, though on a much smaller scale, of course, to the physicians who must, in the end, be the real judges of the fitness of radiologists when the health of their patients is at stake?

RELATION TO OTHER BRANCHES

Anatomy, one of the first basic branches, is a study of the normal. It is not a subject to be "crammed" and all too soon forgotten. Whether it is covered during the first year or, better, during the first two years, that is the appropriate time for demonstrations of normal living anatomy as depicted on roentgenograms or by fluoroscope. This could be done all at one time, but preferably, as each part of the body is taught, the normal roentgenographic appearances could be demonstrated. This would include the skeleton, with adult appearances, and also a short demonstration of epiphyseal development, with an explanation of what the roentgenographic appearances mean at different ages. I never knew just what an epiphyseal separation really was until I saw it demonstrated roentgenographically in intern days. The relations of the bones at the various joints and in the spine should be described anatomically and then roentgenographically. The student seems utterly at sea when shown roent-

genograms of sinusitis, mastoiditis, pituitary tumors and the pathologic conditions demonstrated by ventriculograms and encephalograms. Surely, when the student is taught the anatomy of the head and brain he could be made to understand the roentgenographic appearances of the paranasal sinuses, mastoid cells, sella turcica and cerebral ventricles. I always considered the latter and the circulation of the cerebrospinal fluid things to be learned and then forgotten until the advent of ventriculography and encephalography. Surely, typical normal encephalograms and ventriculograms could be advantageously used for demonstration purposes when these structures are considered anatomically. The entire digestive tract could be demonstrated roentgenologically as the anatomy instruction proceeds. The student should be taught just how the radiologist sees it as a muscular tube with potential lumen when empty and with invisible walls, but only as a lumen shadow when filled with opaque contents. Later on he will be better able to understand how pathologic conditions will affect this lumen shadow. The kidneys, ureters and bladder can be demonstrated by normal urograms after retrograde or intravenous injections of opaque substances. Normal gallbladder demonstrations will be in order, with a few facts explaining the method of filling by the dye, although this would come more under physiology. In connection with the thoracic contents, the heart and vessel shadows should be demonstrated. Diaphragmatic excursion and cardiac pulsation should be reserved for section fluoroscopy. Group demonstrations would always be desirable for all this teaching, especially to permit of questions being asked by the students, but, if not feasible, much improvement in the present teaching plan could be made possible even by the usual class demonstrations of the various parts as the anatomic instruction proceeds. In all these demonstrations the student will be better able to understand why he sees the shadows of the structures shown if he has just received his preliminary short course in physics. Needless to state, these anatomic demonstrations should precede any attempt to teach roentgenographic pathology. All this anatomic teaching should be carried out in the medical department.

The course in physiology is an important teaching opportunity for roentgenology. Many of the important and really practical physiologic facts have been determined by fluoroscopic and roentgenographic observations, especially in connection with the digestive and urinary tracts. A number of the older beliefs have been entirely changed, and yet it is surprising how slow physiologists have been in appropriating this means of gaining knowledge, and it is inconceivable how known and recognized roentgenologic discoveries have failed to appear in textbooks. Barclay calls attention to the persistence of the Alexis St. Martin observations in modern print when they are manifestly absurd in the light of our present knowledge of gastric motility. How many physiologists teach that the stomach cannot empty properly when the individual lies on his left side; that peristalsis is a mixing mechanism in the stomach but largely propulsive in the intestine; that it and general gastric tonicity together are responsible for motility; that the shape and position of the stomach depend on the build of the individual, tonicity and the amount of contents; that there are such conditions as gastric compensation and decompensation; that pyloric spasm is induced by heavy exercise after a meal, mental fatigue and headache, and that most or all of these phenomena can be demonstrated easily by the fluoroscope? Students seldom know the differences in motility of the upper and lower small intestine and of the mass type of peristaltic phenomena of the colon, and yet these are all practical facts. Several men have followed Cannon in this line of investigation, but many have not. During recent studies of the normal swallowing act I have been surprised at the inaccuracies of physiologic statements concerning this mechanism or the lack of them. Barclay [3] has been struck by similar observations. It is almost inconceivable how the radiologist could have progressed as he has without the help of the physiologist, but it is conceivable that progress could have been more rapid with the physiologist's cooperation in the early days. It is quite easy to demonstrate how coarse foods remain much longer in the stomach than semiliquid suspensions of finer food particles. This is an example of information that would be of value in connection with later clinical teaching. Demonstrations of barium enemas would be most instructive even if made but once to each student. The pulsations of the heart and vessels, the normal movements of the diaphragm domes and the costal movements with respiration would be so spectacular as to be easily remembered by the student. Naturally, all such demonstrations could be witnessed by only small groups of students at a time. The dangers of exposure should be considered carefully as they apply to both observers and subject, and all such demonstrations should be under the direction of the department of radiology.

Pathology is the next branch by which the student should be helped toward an understanding of the practical aspect of roentgenology. Any teaching along this line should follow that of the normal, as already described. Pathologic anatomy in conjunction with roentgenology should be taught first, from the standpoint of the manner in which the disease affects the structure directly and grossly, and, secondly, as it alters function, because roentgenology is essentially a study of pathology in the living subject and thus differs from morbid anatomy as it is usually understood. The student should learn the actual gross and microscopic pathology first and then be taught to apply that knowledge to roentgenographic and even fluoroscopic appearances, just as the trained roentgenologist has to do every time he attempts to interpret evidences of disease in his roentgenograms or by roentgenoscope. The later didactic course in radiology will serve to show that when two or more pathologic processes present similar or indistinguishable appearances the clinical aspect of the case at hand, that is, history and clinical observations, must be carefully considered in the rendering of a correct interpretation by the process of exclusion. It is probable that, when the student has become familiar with normal roentgenographic appearances, typical roentgenograms of pathologic conditions will serve the pathologist well for demonstration purposes, not only when teaching from gross specimens, but also in general didactic instruction in various pathologic conditions. Needless to say, a normal roentgenogram of the structure should always accompany that of the pathologic condition under discussion, as, for example, cancer or ulcer of the stomach, intestinal neoplasms, bone tumors, aneurysms, heart conditions and many other intrathoracic lesions. It would seem almost if not quite as important to teach roentgen

3. Barclay, A. E.: The Normal Mechanism of Swallowing, Proc. Staff Meet., Mayo Clin. **5**: 251-257 (Sept. 10) 1930; Brit. J. Radiol. **2**: 534-546 (Dec.) 1930.

appearances in pathology as it is the histologic pictures of the processes. The roentgenograms of the patient should always be on display in the autopsy room, especially when students are present.

PLACE IN CURRICULUM

The question naturally arises as to how all this instruction is to be carried out in connection with the preclinical branches, and especially in a minimum of time in an already overcrowded curriculum. The time factor in the problem may be disposed of first. All the demonstrations mentioned would be of comparatively short duration and form really a part of the teaching of the branch in which they are included. Many of them would lead to a better understanding of the subject at hand, especially from the practical point of view. I believe that the results obtained would amply pay for any extra time consumed.

It would seem preferable for all this preclinical as well as subsequent instruction to be under the direction of the professor of radiology, and for the teaching or demonstrations in each branch to be arranged through agreeable cooperation with the professor in each. There could be one fully equipped roentgenologic department in the medical school, with a well trained technician in charge who could handle all demonstrations and also take charge of all experimental work, as in research surgery, physiology, anatomy, pharmacology and other branches requiring it. This technician would not be a teacher. There are two ways in which roentgenologic teaching could be carried out. The first would be directly by a representative of the department of radiology. The radiologic staff in a teaching institution and hospital must, of necessity, in these days, be a large one. There must be a professor at the head and at least one or two associates. The assistants are frequently two to three year fellowship men, who are to become the trained radiologists of the future. They usually have minor faculty appointments. Technicians must look after all the details of purely technical work. One or more of the associates or fellowship men could be appointed to look after all the details of the instruction in the preclinical branches. The other plan would be to place this instruction in the hands of trained and competent members of the staffs of the branches, but with the department of radiology having a cooperative oversight. A combination of the two plans might be found advantageous. Decentralization of radiology is usually not a successful venture in the long run. It is a duplication of effort and is expensive and is not conducive to the best interests of teaching in general. It leads to a one track mind, whether applied to anatomy, physiology or clinical subspecialties, and fails to preserve the active spirit of cooperation so essential to the perfect teaching machine. The trained and experienced general radiologist is in a better position to see how the teaching in connection with all the branches can be best correlated. Clinical radiology is not laboratory work as we usually understand it. The trained radiologist must have a far wider vision than any laboratory chief can possible have.

In the third year, the student should be taught to correlate his knowledge of anatomy, physiology and pathology in a clinical application. The instruction should also be in the nature of a review, which intensifies the mental impression that may have been made previously. After such preclinical teaching as has been outlined there should be a striking difference in the student's receptivity to the clinical application of roentgenology compared to that which is possible when the attempt is made to teach him pathologic roentgenology only at this time, and without any preliminary introduction. The third year instruction under the radiologic staff, who can best correlate previous, present and future teaching, should cover a period of from sixteen to eighteen weeks during the last half of the year, with a weekly demonstration lecture. Each one should be elementary and based only on typical pathologic cases or examples. All exceptional and confusing cases should be absolutely excluded, and as few illustrative ones used as possible. Continuous didactic lectures illustrated by numerous films or slides shown in rapid succession make but little mental impression on the student, who is still very much a novice. An ideal way would be to divide the class into small sections for demonstration purposes, with each member of the staff teaching a small group simultaneously. Few institutions are equipped to do this, however. While actual didactic lectures should be avoided as much as possible, a few of them are necessary, especially in connection with radiation therapy, which is preferably a fourth year subject, however.

In the fourth year, roentgenology and clinical medicine and surgery and the special branches should be still further correlated. The plan we have followed for a number of years has worked out very satisfactorily. A class section of about twenty students spends an hour a week for six to eight weeks in a medical roentgenologic conference in which the director or professor of radiology is the leader and with the medical staff in attendance. Individual cases with which the students are familiar are discussed from the standpoint of history and clinical observations by the medical staff. The roentgenograms are then demonstrated and the roentgenologic deductions presented. The students are requested from time to time to attempt roentgenographic interpretations and are urged to ask questions.

Similar conferences are held weekly on surgical cases, with the surgical staff in attendance. After the roentgenologic deductions have been made, the surgeon in charge of the case in question briefly reviews the operation and gives the operative observations. These conferences last throughout the fourth year, so that each student has from twelve to sixteen hours of instruction. A similar plan is carried out with the pediatric staff, although student attendance is optional.

In addition to this, clinical medicine and surgery, and even some of the other specialties, should be taught with the use of roentgenologic data from roentgenograms as a part of the clinical picture of each case under discussion. Probably the subject of fractures is universally taught in this manner. The student will have a much better understanding of what the roentgenograms are intended to convey if he has had such preliminary training as has been outlined. In more or less didactic teaching of clinical subjects, roentgenograms of typical cases might well be shown, with normal roentgenograms for comparison, as a part of the clinical picture of each disease.

As has been previously stated, the preferable method of teaching radiation therapy would be through the agency of a cancer clinic group. The student should be taught unbiased views in regard to the indications and limitations of radium, roentgen rays, surgery and electrothermic methods. He then understands the necessity for early diagnosis and is prepared to go out and choose between accepted and unethical and unscientific methods of treatment.

The foregoing recommendations prescribe what would seem to be an ideal method of teaching radiology to undergraduate medical students and its correlation in a practical way with preclinical and clinical specialties. They are not entirely personal views but include also the ideas and even the practices of many teachers of radiology. They are offered for the purpose of general consideration with the hope that they may assist in the betterment of at least a small part of the medical curriculum.

CHRONIC INTERMITTENT DUODENAL OBSTRUCTION *

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Chronic intermittent duodenal obstruction or ileus has attracted increasing attention in recent years and is generally being accepted as a clinical entity. There are still a few who hold that it is not a clinical entity but a radiographic sign caused by and associated with various intra-abdominal lesions. However, most competent observers in this field have come to consider it as a distinct clinical condition. Various descriptive terms have been applied to it, such as arteriomesenteric occlusion, congenital fixation of the duodenum, stenosis of the duodenum, megaduodenum, chronic duodenal ileus or stasis and chronic intermittent duodenal obstruction.

There are several causes of the condition. But in this discussion we shall confine ourselves to the two that are the most frequent and important. First, there is the group of cases due to peritoneal adhesions or bands, congenital or inflammatory, fixing the first and second parts of the duodenum. Secondly, there is the group of cases due to intermittent obstruction of the third part of the duodenum. This is caused by pressure of the mesenteric pedicle with its contained blood vessels or by the ligament of Treitz on the duodenum or by a very sharp occlusive angle at the duodenojejunal flexure. In spite of the growing literature on the subject, these conditions are not yet generally appreciated or recognized. Their importance is realized when it is understood that not a few of the vague and indefinite chronic disturbances of the gastro-intestinal tract are assignable to them.

The clinical part of this report is based on a study by one of us (H. F. S.), of forty-six cases of chronic intermittent duodenal obstruction. Only cases that have been thoroughly studied and followed for a sufficient length of time to reveal something of their subsequent clinical course have been included. The period of observation has varied from six months to eight years. While the group is not large, it seems adequate to serve as a basis for the discussion of our subject.

RESULTS OF OBSERVATIONS

Incidence.—The occurrence of chronic intermittent duodenal obstruction has been reported in patients as young as 3 years and as old as 68. Our youngest patient was 11 years of age and the oldest, 59. Most of the patients (thirty-four) were between the ages of 25 and 35. There were four times as many females (thirty-seven) as males (nine). In this series there were fourteen cases of obstruction at or near the duodenojejunal angle and thirty-two in which the obstruction was in the first half of the duodenum. This division is somewhat arbitrary, as there were at least eight instances in which partial obstruction seemed to be present in both parts of the duodenum.

Symptomatology.—The symptoms of this condition are extremely variable, vague and noncharacteristic especially in the milder forms. The most common symptom in this series was a feeling of epigastric fulness and flatulence, especially after meals. This was also Wilkie's [1] experience. Several of the patients had had digestive disturbances such as constipation, vomiting and "bilious attacks" from early childhood. Others did not show symptoms until early adult or middle life. In the latter group, trouble frequently followed some preceding debilitating illness, such as grip or a marked loss in weight or a period of being generally "below par." The explanation of this is not clear.

Pain.—Pain of some degree was present in eighteen cases (40 per cent). Usually it was in the epigastric region; at times it was more in the right epigastrium (in patients with adhesive bands about the first part of the duodenum). In those patients with obstruction at the duodenojejunal angle, it seemed to be more in the left epigastrium. It varied from mild discomfort or distress to sharp and, at times, severe pain. In some cases, it came immediately after eating; in some, from one to three hours after meals, as in peptic ulcer, and in others it was almost continuous. The feeling of fulness and flatulence was often present with the pain. Eructations of gas were present in most patients. Partial or complete relief was obtained by sodium bicarbonate, belching, an enema, or by assuming the knee-chest position. Several patients had learned the method of securing relief by the use of the knee-chest position. Usually the pain disappeared when the stomach was empty. The distress or pain experienced by these patients frequently followed excessive fatigue, nervous or emotional strain, coarse food or large meals.

Vomiting.—Nausea and vomiting were outstanding symptoms, occurring in nearly 50 per cent (twenty-two) of the cases. Many patients complained of troublesome nausea and persistent anorexia that seriously interfered with their gaining weight. Others suffered with periodic attacks of vomiting usually associated with varying degrees of headache. These attacks were usually described by the patients as "bilious headaches" and not a few stated that they began in early childhood. In a few patients the vomiting lasted from twenty-four to forty-eight hours, and the vomitus in these cases almost invariably contained bile. The headaches in some instances were of the typical migraine type, but in only a few cases was there a clear-cut history of the familial feature so common in migraine. The six-hour gastric retention discovered by roentgen examination in some patients undoubtedly played an important rôle in causing anorexia, nausea and vomiting. In many patients, it would seem, there are disturbances in intestinal peristalsis or the intestinal gradient as described by Alvarez.

Constipation, often quite obstinate, was present in most cases, though in a few (six) constipation alternated with diarrhea. About one half of the patients had lost varying amounts of weight. In some cases the symptoms were continuous; in others they occurred in attacks of varying duration with remissions of com-

* Read before the Hartford Medical Society, Hartford, Conn., Nov. 17, 1930.

1. Wilkie, D. P. D.: Chronic Duodenal Ileus, Am. J. M. Sc. **173**: 643 (May) 1927.

paratively good health lasting a few weeks, months or even years.

Toxic Symptoms.—Many of the patients presented one or more so-called toxic symptoms. Conspicuous among these were headache, severe migraine, excessive fatigue, lassitude, mental depression, insomnia, nervousness, emotional instability and poor concentration. The

Fig. 1.—Small duodenum due to periduodenal bands.

mechanism producing these symptoms is far from clear, though various theories about toxic duodenal contents have been advanced. These nervous, functional or toxic symptoms frequently so completely dominate the clinical picture that the condition is considered to be a gastro-intestinal neurosis. As a consequence, and especially if no roentgen investigation is made by a competent observer who appreciates these conditions, the real diagnosis may be entirely overlooked. Such cases are then diagnosed as autointoxication, nervous indigestion or neurasthenia. There was no clear-cut difference between the symptoms of obstruction occurring in the first half of the duodenum and those present when the obstruction was at the duodenojejunal angle. In general, however, I received the impression that the pain or distress was more frequent on the left side; that it was apt to be more severe and that vomiting, when present, was more frequent and pronounced in the cases with duodenojejunal obstruction. Appreciable six-hour gastric retention, as shown by roentgen examination, was more frequent in the patients having obstruction in the first half of the duodenum. Consequently, as one would expect, a higher percentage of patients were operated on in this group.

Physical Examination.—This is important chiefly to rule out other intra-abdominal lesions. Most of the patients are of the asthenic type with the narrow costal angle and broad pelvis usually found in visceroptosis. All of the patients with obstruction at the duodenojejunal angle had this habitus. But seven patients with obstruction in the first half of the duodenum had a normal habitus. The majority of patients had low blood pressure, poor muscular tone, hyperactive reflexes and signs of vasomotor instability. More than half of the patients had diffuse epigastric tenderness; in some it was more on the right side, in others more on the left.

Laboratory Investigation.—Gastric analysis was carried out in thirty cases but showed nothing characteristic. Hypo-acidity, normal acidity and hyperacidity were present in nearly equal proportions. Blood was not found in the stools, though an excess of mucus was frequently present. Some of the patients had a mild secondary anemia, and in four it was marked. The basal metabolic rate was increased in two patients and appreciably low in three.

Roentgen Observations (H. M. I.).—The roentgen observations usually presented are characteristic in appearance but may at times be difficult to determine. In the first group, in which bands are present about the first and second parts of the duodenum, one finds that the duodenum may be markedly contracted in size in comparison to what one would expect to find from the size of the stomach (fig. 1); or it may be larger than the normal (fig. 2). Again, the duodenum may be deformed, presenting an appearance which is more or less analogous to that of ulcer, but the deformity is not constant as in ulcer and varies from time to time in various positions (fig. 3). The upper part of the descending limb may be definitely fixed and the part adjacent to the liver may have a flattened appearance. Normally there is a curve at the junction of the first and second parts of the duodenum, but when a certain type of band is present the curve is destroyed and the duodenum presents a horizontal line rather than a curve (figs. 4 and 5). A commonly observed phenomenon is a fixation of the dependent limb of the duodenum to the liver at a certain point, producing a definite angulation (fig. 6). These various phenomena may cause sufficient atresia of the duodenum to produce eventually a slowly emptying stomach. In an obstruction at the angle of Treitz the appearance is quite characteristic (figs. 7 and 8). The angle is usually shifted to the right of its normal position, so that it lies either over the body of the third lumbar vertebra or even to the right of it. The dependent duodenum is usually enlarged especially in its transverse diameter, and the valvulae conniventes are frequently absent. The duodenum is not able to empty itself completely and there is more or less reverse peristalsis with considerable writhing and twisting. These phenomena are frequently observed in a normal duodenum and to be of any diagnostic significance the phenomena must be observed after digestion is well established. The motility of the stomach is frequently seriously interfered with as it is not uncommon to see retention.

Fig. 2.—Elongation of duodenum due to bands at its extreme apex.

Associated Lesions.—Duodenal ulcer was present in three cases of this series, and an operation was performed in two. Four patients had cholecystitis (two with gallstones). All were operated on. More than half of the patients who came to operation for intermittent duodenal obstruction had had their appendixes removed when we first saw them. In none of these had the symptoms improved following the removal of the appendix. Niles[2] has already pointed out the

2. Niles, W. L.: Congenital Fixation of Duodenum, Am. J. M. Sc. **169**: 328 (March) 1925.

frequency of the removal of the appendix in patients with duodenal obstruction.

REPORT OF CASES

CASE 1.—*Intermittent obstruction at the duodenojejunal angle (angle of Treitz).* A single woman, aged 50, had complained of indigestion, nervousness and exhaustion for seventeen years. For three years she had suffered with distress in the left side of the epigastrium, flatulence and belching from one to three hours after meals. During her worst attacks she secured some relief following an enema or by assuming the knee-chest position. She was usually severely constipated and had periods of headache, exhaustion and mental depression. There was slight tenderness in the left side of the epigastrium but the physical examination was otherwise essentially negative. A cholecystogram showed normal conditions. But the gastro-intestinal roentgen examination showed signs of obstruction at the duodenojejunal angle (angle of Treitz) characterized by inability of the duodenum to empty completely, reverse peristalsis, and writhing and twisting of the duodenum. After following a regimen of special diet, rest after meals and postural treatment, and wearing an abdominal belt for a suitable time, the patient was greatly improved and was able to resume her occupation as a nurse.

CASE 2.—*Marked fixation of the first and second parts of the duodenum.* A man, aged 59, had suffered from "bilious attacks" consisting of anorexia, lassitude, headache, depression, nausea and vomiting, since he was 10 years of age. The attacks lasted one or two days, occurring every few months at first, but during recent years they came every two or three weeks. Usually they seemed to be induced by overeating or excessive fatigue and were relieved by fasting or small meals and rest. There was no abdominal pain or distress. When 40 years old, the patient had a "nervous breakdown" lasting five years. He was markedly underweight, the blood pressure was low, and he had a pronounced visceroptotic habitus. Roentgen examination showed a long vertical stomach, which contained about 30 per cent of the barium at the end of six hours. This was due to an unusually sharp fixation and angulation of the apex of the duodenum. Because of the marked changes on roentgen examination and the failure of previous medical treatment, surgical intervention was advised. At operation, a pronounced duodenohepatic band was divided, which released the duodenum so that it assumed its normal shape and position. Striking improvement followed the operation. The "bilious attacks" stopped; there has been no vomiting and the patient gained 35 pounds (16 Kg.) in six months, his weight increasing from 120 pounds (54.4 Kg.) to 155 pounds (70.3 Kg.). He has been well for nearly two years.

Fig. 3.—Irregularity in outline of greater curvature surface of duodenum due to pressure from without.

CASE 3.—A girl, aged 11, had complained for one year of attacks of sick headaches accompanied by nausea, vomiting and epigastric pain. During the previous two months the attacks had become more frequent and severe, and she had lost several pounds. Physical examination showed only that she was under weight and that she had a moderate enteroptotic habitus and some epigastric tenderness. Roentgen examination showed intermittent obstruction at the angle of Treitz characterized by slow emptying of the stomach, reverse peristalsis, writhing and twisting, and stasis in the most dependent part of the duodenum. Under medical treatment the patient slowly improved, and she had had only two slight attacks of headache and vomiting during the past two years.

CASE 4.—A married woman, aged 46, complained of "bilious attacks" consisting of severe headache, nausea and vomiting with marked prostration for two or three days. She had suffered from these symptoms for twenty-five years but during the past few years the attacks had become more frequent, occurring every two or three weeks. Indiscretion in eating, overfatigue, or an emotional upset often precipitated an attack. Rest in bed and a fluid diet gave quicker relief than anything else. Three years previously she had had a severe

Fig. 4.—Angulation and high fixation of the duodenum.

attack of abdominal pain in the left upper quadrant. Since then she had had several milder attacks and had been troubled with flatulence and gas after eating. Physical examination showed no important abnormalities. The roentgen examination showed a stomach that was not quite empty in six hours, with the apex of the duodenum fixed and angulated. A cholecystogram disclosed a slowly emptying gallbladder containing a single large gallstone. The gallbladder and its contained stone were removed without complications. The attacks of abdominal pain on the left side ceased, but within a short time after the cholecystectomy the "bilious attacks" with headache, nausea and vomiting returned. Medical measures brought little relief. A second roentgen examination, made nearly a year after the first, showed the same condition of duodenal fixation as was found at the first examination. Following a second operation with release of the constricting bands about the duodenum, the patient was almost entirely relieved of the attacks and has been quite well for many months. It is possible that this was purely a case of cholecystitis and adhesions involving the first

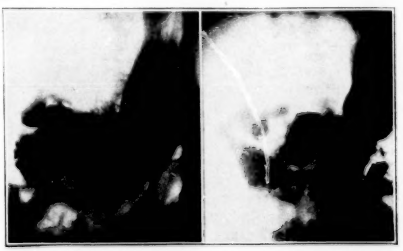

Fig. 5.—Redundance of upper part of descending limb of duodenum.

part of the duodenum. It is interesting, however, that the long standing digestive disturbances called bilious attacks were not controlled until the operation devised for cases of fixation of the duodenum was performed.

TREATMENT

The treatment for this condition constitutes a rather difficult problem. Much of the difficulty concerns the decision as to which patients should have the benefit of surgical measures. At present, we think that a conserva-

tive attitude regarding operation is the best one. And yet a certain number of cases undoubtedly require surgical intervention for relief or cure. In this series of forty-six patients, eight have been operated on, five with excellent results, one with moderate benefit and two with no improvement. And as the condition, even without treatment, is not rapidly progressive, we think that with few exceptions medical measures should be given a thorough trial before resorting to operation. In this series, thirty-eight patients were treated medically. A survey of the literature on the subject shows that practically all observers are agreed that the vast majority of these patients do not require operation and that they respond very satisfactorily to medical treatment.

Medical measures are largely concerned with treating the visceroptosis, constipation and nervous symptoms. Diet is important. As most of the patients are underweight, the diet should be of high caloric value. In addition, all foods should be thoroughly cooked and the vegetables puréed, giving a bland, low residue, so-called smooth diet. Frequent small meals should be given, at least during the earlier part of the treatment. There should be enough fruit and vegetables to help overcome constipation. Often these patients have a spastic or irritable colon which needs appropriate care. With some patients the best plan is rest in bed with forced feeding until a substantial gain in weight has been made. A course of postural treatment is most helpful. Wilkie [1] has already emphasized this. The treatment is carried out by elevating the foot of the bed, elevating the hips, or having the patient lie on the stomach or right side after meals, or assume the knee-chest position for short periods each day. Some patients will obtain marked relief during an acute attack by the last procedure, as was the case with three of the patients. In many instances a properly fitted corset or abdominal belt is needed to overcome the traction of the mesenteric pedicle at the angle of Treitz and of the stomach on the first half of the duodenum. A course of abdominal exercise and massage will help muscle tone considerably. Phenobarbital or bromides are useful for the nervous symptoms resulting from spasm of the pylorus, duodenum and colon. Constipation requires laxative nonbulky food, liquid petrolatum and agar, but laxatives should be avoided. The patients should be kept under prolonged observation to get the best results from medical treatment. Continued perseverance is required of both patient and physician.

If satisfactory results are not obtained by conservative treatment, surgical intervention should be considered. The following considerations should help to decide the question of operation: the result of suitable medical treatment carried out for a sufficient time; the amount of obstruction at the duodenojejunal angle with its resulting stasis in the dependent loop of the duodenum; the extent of the duodenal fixation, especially if accompanied by a six-hour gastric retention, and the severity of the symptoms especially of pain and vomiting. Young patients with short histories and severe pain and vomiting seem to get the best results from operation. Division of constricting bands seems to be the operation of choice for cases with fixation of the first half of the duodenum, while duodenojejunostomy is best suited to the cases of obstruction at the duodenojejunal angle. The more radical operations with their greatly increased risk are not justifiable. The postoperative care of these patients is extremely important. The best results are obtained when a suitable diet, massage, postural treatment and an abdominal belt are used during convalescence. In the most marked cases with a short history, marked roentgen changes and considerable epigastric pain, the results of operation are quite striking. This was the case in four of the eight patients operated on in this series.

Fig. 6.—Narrowing of descending limb of duodenum caused by bands.

Fig. 7.—Dilatation of duodenum resulting from obstruction at the angle of Treitz.

Fig. 8.—Another example of dilatation of the duodenum resulting from obstruction at the angle of Treitz.

SUMMARY

1. Chronic intermittent duodenal obstruction or ileus is generally accepted as a clinical entity.

2. The two most frequent and important causes of the condition are, first, peritoneal adhesions or bands fixing the first and second parts of the duodenum, and, second, pressure of the mesenteric pedicle, or a sharp occlusive angle at the duodenojejunal flexure causing obstruction of the third part of the duodenum.

3. The present study includes forty-six cases of this condition, eight of which came to operation.

4. The symptoms are extremely variable and noncharacteristic but should suggest the possible presence of the real trouble in many instances and lead to careful roentgen study as a consequence.

5. Accurate diagnosis depends largely on a careful and skilful roentgen study. The characteristic roentgen observations found in the various types are described.

6. The great majority of these cases respond satisfactorily to medical treatment, but there is a small group with pronounced symptoms and marked roentgen observations which does best with conservative surgical measures.

THE TREATMENT OF FRACTURES BY MEANS OF SKELETAL DEVICES

WITH FIXATION IN PLASTER-OF-PARIS CASTS *

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It may be said that the objective of fracture treatment was formerly to secure the patient's recovery with the injured part or parts in good contour and with the fracture fragments in as good position as appeared to be possible. At present, much more attention is being paid to restoration of function. And with the more general use of the x-rays during and after fracture treatment, it is becoming apparent that restoration of correct anatomic position of the injured parts goes hand in hand with the return of satisfactory function. Not only the medical profession but also the public is becoming aware that accuracy of reposition of fragments in fractures is essential to obtaining uniformly good functional results.

It is well known that, whatever occasional statistics may seem to indicate, satisfactory results as to anatomic reposition and physiologic efficiency are not being obtained regularly. The faults of fracture treatment lie obviously at two points: (1) the failure to obtain good primary position, and (2) the inability to control the fracture or the patient after (if) the fracture has been properly reduced. Some of the difficulties in these respects arise out of the clinical teaching of textbooks and medical schools, but this simply reflects a difficulty further back; the source of failure lies in the perplexity of the profession as a whole in the face of a confusion of what are thought to be principles of treatment. There are so many "solutions," new and old, for the familiar problems that one is at a loss, sometimes, to discover which are really in accord with the manifest indications for treatment.

Witness, as examples of these confusing tendencies, the precepts of the schools and the treatises: 1. Plaster of paris should never be used in treating fractures. 2. If plaster of paris is used as a circular cast, the cast must always be split. 3. The Thomas splint is always indicated for the hospital treatment of compound fractures. 4. The Thomas splint must never be used except as an emergency splint. 5. The use of ice tongs, pins and other skeletal devices is dangerous because likely to produce infection or injury to neighboring joints. 6. It is of primary importance to establish early motion, especially in compound fractures. The list might be extended. The task is rather to suggest which of these divers methods best conform to fundamental surgical principles and which may be united into a more effective procedure for treating fractures. For it is probably not a confusion of fundamentals that is perplexing but rather the various technics thought to be useful in applying them.

BACKGROUND

The history of fracture treatment in this country, as elsewhere, is the story of dozens of methods, a myriad of braces, splints and other apparatus, and a variety of "principles" to justify each procedure. Out of the chaos one finds emerging, in the early years of the last century and, of course, before the antiseptic era, these precepts: (1) extension and counterextension in direct line of the affected member; (2) splinting to hold fragments in their proper places; (3) immobilization, as efficient as possible, giving rest until healing is well under way and (4) in compound fractures, treatment of wounds by cleansing, application of cold water and use of various lotions.[1]

After Lister's time, various changes were made to permit the antiseptic care of wounds. Lister himself endeavored to exclude infection from wounds by his use of antiseptic dressings; later surgeons, departing from Lister's teaching, carried into the wounds themselves the war against infection. In 1922, the older methods of fracture treatment, embracing those already mentioned and others evolved in the latter part of the nineteenth century, were summarized by Boorstein and Landsman as follows:[2]

1. Reduction of the fracture after the swelling has subsided.
2. Reduction of the fracture by direct pull.
3. Immobilization as far as possible of the joints above and below the break.
4. Application of a straight splint though the limbs are usually round. [By no means universally the case, and probably not from principle. Cf. Dr. Philip Syng Physick's curved splint for morbus coxarius.[3]]
5. Securing of immobilization of bone and joint by bandages left in place until firm union has occurred.
6. Allowing the soft parts (skin, nerves, vessels and muscles) to take care of themselves.
7. Contour or union in good position the main aim.
8. Prolonged confinement in bed.
9. Correction later on of deformity if it occurred during treatment. It is often considered inevitable.
10. Roentgen ray used only once or twice during the entire time.

This is the old decalogue! Today much of it has been put aside, and we gather from a similar summary, by Boorstein and Landsman, of modern methods and from other sources that the present "commandments" are these:[4]

1. "Splint 'em where they lie!"
2. Immediate reduction.
3. Selection of apparatus which will maintain reduction, but,
4. Provision for its early removal (or disturbance) to permit inspection, dressings, and massage or motion.
5. Plaster of paris permitted only when completely divided in at least one line. Circular plaster-of-paris splints should always be split.
6. Traction splints usually indicated. If plaster is used, it must be split.
7. Skeletal traction, when used, is in conjunction with a suspension splint.
8. For compound fractures, débridement is to be followed by primary or partial closure, or by some other form of active antiseptic treatment.

With all these conflicting procedures, remote, recent and contemporary, the profession is confronted. Little wonder that the more fundamental principles have been

* Read before the Section on Orthopedic Surgery at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Coates, Reynell: An Analysis of Some of the Modes for Effecting Extension and Counterextension in Fractures of the Lower Extremities, Am. J. M. Sc. **20**: 18, 1837. Norris, G. W.: Report of the Surgical Cases Treated at the Pennsylvania Hospital, 1838, Am. J. M. Sc. **23**: 273, 1838-1839.
2. Boorstein, S. W., and Landsman, I. J.: Treatment of Fractures by Orthopedic Methods, Arch. Surg. **7**: 643 (Nov.) 1923.
3. Randolph, J.: Remarks on Morbus Coxarius. Dr. P. S. Physick's Method of Treating This Disease, Am. J. M. Sc. **7**: 299, 1830.
4. Boorstein and Landsman (footnote 2). Outline of Treatment of Fractures: Syllabus Adopted at the Boston Conference, April, 1922, Arch. Surg. **6**: 172 (Jan.) 1923. Cooperative Committee on Fractures, A. M. A.: Primer on Fractures, Chicago, 1930.

lost sight of and that confusion has resulted. Or, if it is said that the fundamentals have not been lost sight of, then it must be admitted that the profession is not using the best methods at its disposal for the most effective application of them.

PRINCIPLES

Now the principles of all fracture work should be apparent: (1) immediate restoration of correct length and position; (2) maintenance of that length and position; (3) complete rest to preclude muscle spasm

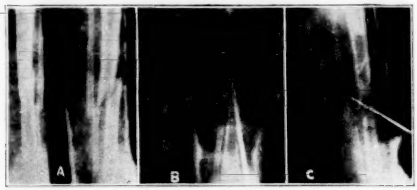

Fig. 1.—*A*, fracture of tibia and fibula in a child, aged 10 years; pin traction through calcaneum and direct fixation of fragments; *B* and *C*, lengthening and fixation done after seven weeks of shortening during which firm union had occurred in malposition. Full length was secured on the operating table; the pins through the calcaneum and in the fragments were embedded and left in the cast.

and other complications and to facilitate healing; and, in compound fractures (in addition to the foregoing), (4) primary asepsis or antisepsis to reduce infection; (5) adequate drainage; and (6) protection against infection or reinfection. Immobilization, in connection with the third of these principles, must be so effective that all movement is prevented and so that pain and muscle spasm are relieved. Without elaborating further, the fact may be pointed out that, whereas some of the older methods sought to realize these principles, many of the modern ones lose sight of them; hence the results are poor.

PROPOSALS

A somewhat new attempt to fulfil some of these basic requirements in the treatment of fractures came soon after the war with the so-called fixed traction of Sinclair, Pearson and others. Using ice tongs and pins for skeletal traction in combination with Thomas splints, they got much better results than were usual and convinced me, at least, of the value of such devices. Even these, however, were not without complications in the way of slipping points (of ice tongs), loss of position, and the like; and the need for an even more truly "fixed traction" was apparent.

This was recognized by several of us. T. Turner Thomas [5] sought for greater security in fractures of the leg, using an iron plate having a sharp spike at one end, which plate he placed against the plantar surface of the foot and then included in a foot-cast, which was well padded to permit its use in securing extension. He then placed a board splint along the back of the entire extremity and included leg and splint in a second cast extending above the knee. These casts having set, he reduced the fracture by a pull on the foot-cast, and maintained reduction by driving the spiked plate perpendicularly into the wooden splint where it extended beyond the heel, and then included the entire extremity in a third cast.

5. Thomas, T. T.: A Method of Applying Extension with Plaster Cast Fixation in Fractures of the Leg, S. Clin. North America **1**: 207 (Feb.) 1921.

My own effort to achieve fixed traction was inspired rather by the technic of Sinclair and the others in the use of the Thomas splint. But to avoid the complications which they occasionally had and, at the same time, to conform more exactly to principles of immobilization, securing full length, maintaining correct position, and avoiding pain and muscle spasm, I modified this technic. Securing traction on the operating table at the time of primary reduction, I fixed the entire traction apparatus, moleskin adhesive plaster, ice tongs, pins or whatever form they took, in a plaster-of-paris cast. I [6] advocated this practice in simple fractures shortly after the World War:

1. The usual splint applied to fractures does not immobilize at all. This applies even to the usual plaster-of-paris cast.
2. A considerable number of splints applied to fractures that are followed by joint stiffness have been put on too tight. This fault is as serious as having splints too loose. Even splints that are bandaged too tightly may not immobilize. . . .
3. Uniformity in results after fractures was obtained in France during the military activity more nearly by a standard method of splinting than has ever been accomplished in civilian practice.
4. In fractures of the femur, the general adoption of the Thomas splint, which gives traction and immobilization (if properly applied) either from the skin or from the bones themselves (ice tongs, pins, etc.) without constriction, will contribute greatly, not only to better results in the alinement of the fragments, but also to a very great reduction in the amount of joint stiffness and disability after such injuries.
5. In other fractures, especially of the forearm, leg and spine, the more general use of plaster of paris, applied so as to give real immobilization, will reduce the amount of pathologic change, secure more rapid healing of the injured part, and give more and better function in adjacent joints than can be obtained in any other way.

and two years later for compound fractures as well.[7] I soon found that this technic gave much better results, especially since I have applied to the treatment of compound fractures, as well as to osteomyelitis, the petrolatum packing technic of drainage and rest.[8]

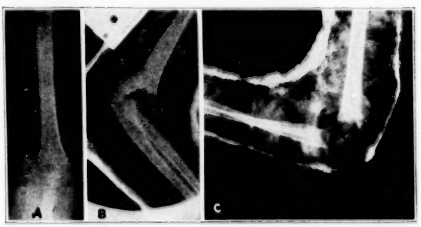

Fig. 2.—Old fracture at lower end of humerus left in malposition brought into better position (*C*) by traction pins through the olecranon and through the middle third of the humerus. After strong traction on these two pins and flexion at the elbow, length and position were maintained by a cast including entire arm and pins.

In dealing with simple fractures, my procedure is this: The patient is anesthesized on the fracture table as soon as possible after the fracture. The regular

6. Orr, H. W.: Early and Complete Immobilization as a Factor in the Preservation of Joint Function in the Treatment of Fractures, Am. J. Surg. **35**: 146 (May) 1921.
7. Orr, H. W., and Thomson, J. E. M.: Maintaining Length and Position in the Treatment of Compound Fractures, J. A. M. A. **83**: 1399 (Nov. 1) 1924.
8. Albee, F. H., and Patterson, Marjorie B.: The Bacteriophage in Surgery, Ann. Surg. **91**: 855 (June) 1930. Orr, H. W.: Treatment of Osteomyelitis and Other Infected Wounds by Drainage and Rest, Surg., Gynec. & Obst. **45**: 466 (Oct.) 1927; Osteomyelitis and Compound Fractures, St. Louis, C. V. Mosby Company, 1929.

traction devices, which are a part of the table, are used in those fractures for which they are suitable, but for others special devices are put on or improvised so that fixed traction may be made on the injured part. In those cases in which, with suitable traction, the ends of the fracture fragments may be made to lock together in correct line and apposition, no additional special device is necessary for controlling the fragments. In many simple fractures, however, especially of the forearm and the leg in the lower third, even after good traction, position cannot be maintained. In such cases I do not hesitate to use ice tongs or pins, so that with traction complete and the fragments in correct position, these ice tongs or pins may be incorporated into the plaster cast as it is applied. With the hardening of the cast, then, the fragments are locked, as it were, in a position of full length, and cannot slip back or rotate. In the case of compound fractures, the foregoing procedure is altered as follows: The fractured extremity is immobilized on the traction table, as soon as the anesthetic has been administered, in good position and with full length. This is done with the smallest possible number of movements. The area of the compound fracture is opened widely and provision made for drainage and for packing the entire space wide open

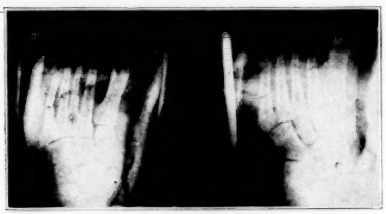

Fig. 3.—Position obtained by use of pin traction through toes. A heavy metal loop extending beyond the toes is embedded in the cast; pins are put through the second phalanges (in this case) of the third and fourth toes only. Twist traction (Spanish windlass) from the pins to the metal loop draws the toes out to perfect length and position for the metatarsals.

with petrolatum gauze. Débridement and mechanical, or even chemical, antiseptic cleansing are resorted to as a part of this first "clean-up" operation.

As in the case of simple fractures, the fragments are brought into as good position as possible and then, if it appears that it will be difficult to control the fragments, ice tongs or pins are inserted on one or both sides of the fracture area so that they will prevent rotation and maintain the length and position of the fragments when they are included in the cast. The wound then having been packed open with petrolatum gauze and the pins or ice tongs inserted as necessary, a dry sterile dressing is placed over the petrolatum packing and an extensive plaster-of-paris cast is put on. Position and control are thus such that the original deformity is corrected at once and cannot recur. Muscle spasm is prevented; pain is minimized; and the wound, while free to drain, is protected against reinfection.

Finally, there is no provision made for postoperative dressings.[9] If it happens that bleeding or other discharge becomes profuse, so that all the dressings and the cast are saturated, a change of the outside dressings may be done through a window in the cast and under strictly aseptic conditions. The wound and wound surface, however, should not be disturbed and, of course, nothing should be done to alter the position of the limb or fracture fragments.

9. Orr (footnote 8).

RESULTS

To discuss argumentatively all the perhaps controversial points involved in this procedure would not be practicable. Most of them have been discussed before.[10]

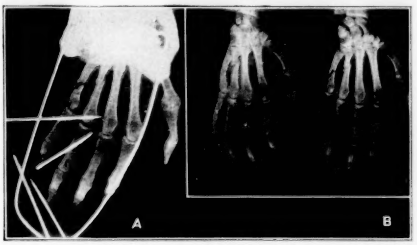

Fig. 4.—*A*, details of pin traction and fixation for fracture of fourth and fifth metacarpals. The metal loop embedded in the cast extends beyond the tips of the fingers, furnishing an "anchor point" for traction pins through the phalanges of the fourth and fifth fingers. Fracture fragments had been in extreme malposition. End-result (*B*); pin marks show no sign of infection.

It will be enough for my present purpose to tabulate and to describe the results of treatment according to this technic.

To review some of the suggestions made at the beginning of this paper, it has been found important to give first thought to the functional result which the physician hopes to achieve. Anatomic reposition, recovery with all parts in as nearly perfect anatomic position as possible, contributes more than anything else to good functional results. It has been my experience that this is true even in those severe compound fractures with considerable loss of substance in which great disability is ordinarily expected. Excellent results have been obtained by this simpler method as a result of its saving of wear and tear on the patient, its prevention of muscle spasm and pain, the minimum of damage to

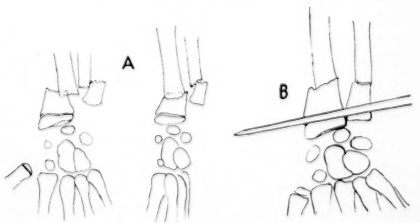

Fig. 5.—A difficult fracture of the forearm with the position obtained at once (*B*) without open operation by use of traction on one pin through the olecranon and a second pin, as shown, through the distal fragments of the radius and ulna. (The case was of a child, aged 10 years.) The length and position secured by traction on the operating table were maintained permanently by a cast which included the entire arm and the pins. Cast and pins were removed after four weeks.

soft parts and the reduction of infection, all of which contribute to an early recovery with the parts in good position.

10. Orr (footnotes 7 and 8). Albee and Patterson (footnote 8). Orr, H. W.: A New Era in the Treatment of Osteomyelitis and Other Infections, Second Detroit Orthopedic Lecture, Wayne County Medical Society, March 29, 1930. St. Paul, Bruce Publishing Company, 1930.

The accompanying tables and illustrations will explain something of my technic and results. In referring to the tables, it is to be borne in mind that a patient pronounced healed or cured has practically a full return of function. Compound fractures were chosen for these tables since, as the general principles are the same as for other fractures, their greater technical difficulty offers a severer test for the method which I advocate. The high percentage of good results may be attributed to the various advantages of the simpler procedure, as shown in the tables.

Fig. 6.—An old fracture of the internal condyle of the tibia with bow leg deformity and considerable disability of a year's standing in a patient, aged 45. The fragment was depressed so that the joint surface of the tibia was much lower on the inner side of the knee. By means of an oblique osteotomy, the depressed fragment was raised and fastened in place by a nail. No opening was made into the joint. The entire extremity (with the pin) was kept in the cast for six weeks; almost complete correction and relief were obtained.

The illustrations show various uses of skeletal traction obtained by using pins embedded in the plaster-of-paris cast. We have also employed pins through the heel and through the tibia in two cases of severe compound fracture of the ankle with additional direct fixation of fragments in the wound. With the wound packed open with petrolatum gauze and then covered over with dry sterile gauze (without the use of drainage tubes or stitches), a closed cast including the ends of all the pins was applied. The fragments were controlled, and there was niether muscle spasm nor inflammatory complication. Pins in the wound area were removed in two weeks without opening the cast; those in the tibia and heel were taken out after six weeks. Excellent results were obtained in both cases.

TABLE 1.—*Compound Infected Fractures*

	Primary	Secondary	Healed	Not Healed	Amputation	Died
Upper extremity	20	10	24	0	3	3
Thigh	7	10	17	0	0	0
Leg	20	18	35	1	2	0
Total	47	38	76	1	5	3

TABLE 2.—*Fractures Compounded by Operation*

	Primary	Secondary	Healed	Not Healed	Amputation	Died
Upper extremity	30	41	71	0	0	0
Thigh	9	25	34	0	0	0
Leg	39	39	78	0	0	0
Total	78	105	183	0	0	0

TABLE 3.—*All Compound Fractures*

	Primary	Secondary	Healed	Not Healed	Amputation	Died
Orr and Thomson	125	143	259	1	5	3

It is clear, then, that while there should be no quarrel with some of the modern precepts of fracture treatment, such as the necessity for emergency splinting and for immediate reduction, one should, on the other hand, look back to some of the older teachings which emphasized rest, immobilization, and dependence on natural agents in healing. Today's methods differ from the older ones, of course, in that they can achieve more perfectly, by the use of modern apparatus, the objectives which the latter perhaps seldom realized. At the same time, however, such modern apparatus and practices as are involved in any hand to hand combat with infection in the wound (irrigation tubes, drainage tubes, antiseptic applications in daily dressings, for example) are discarded, and the benefits of rest and immobilization are put ahead of whatever leads to disturbance or movement of a healing fracture.

In addition to the results previously indicated must be added these points which, especially in compound fractures, also recommend the procedure that has been described: (1) The fracture is better managed; (2) the patient is better managed; (3) the patient requires less constant attention from surgeon, assistants or nurses; (4) the period of hospital care is shortened; (5) the cost to the patient is, because of several of these considerations, lessened; (6) there is relief from the pain of daily dressings, particularly important in the care of children; (7) the possibility of secondary infection is minimal; (8) there is adequate drainage in a wound which is, from the point of view of drainage, open but, from that of infection, closed.

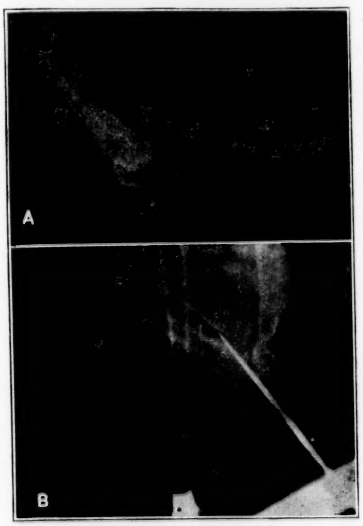

Fig. 7.—Direct pin fixation of a recent fracture of the olecranon in a patient, aged 60. *A*, fixation in this manner may be accomplished easier without open operation by first transfixing the small fragment, then carrying the fragment on the end of the pin into correct position, and then forcing the pin through into the shaft of the bone. *B*, the arm can then be flexed at the elbow, which is very desirable, and the arm and pin immobilized in a cast.

SUMMARY

1. The modern demand in the treatment of fractures, both from the profession and from the public, is for correct anatomic replacement of injured parts and recovery with a maximum of function.

2. The higher development of the roentgen ray and specialization in treatment renders unavoidable a more critical attitude toward the treatment and end-results of fractures.

3. The treatment of fractures by weight and pulley or elastic traction and by less than highly efficient methods of fixed traction in splints has given no more than a rather low percentage of first class results.

4. Technic must therefore be improved, both in the primary reduction and postoperative treatment of fractures, and in the control of the fracture and the patient during the period of healing.

5. The use of skeletal traction devices—ice tongs, pins and even direct fixation of fragments at the point of fracture—and the incorporation of these fixation devices in a plaster-of-paris cast has given better control of the fracture than any other splint.

6. The former objection to plaster of paris, that it becomes soiled because of discharge from compound fractures and that it must be removed for postoperative dressings, no longer holds. The technic that I use in osteomyelitis and have also applied to compound fractures permits the application of a primary dressing which, in most cases, is left undisturbed throughout the entire period of healing.

7. The results that I have had, following these principles and methods of treatment, are better than those reported for other methods.

1307 N Street.

ABSTRACT OF DISCUSSION

DR. HARVEY C. MASLAND, Philadelphia: Operative skeletal traction is an acknowledgment of the fact that the old time-worn mechanics is futile for good reductions of bad fracture deformities. I wish to call attention to a skeletal traction method absolutely nonoperative. It seems to be accepted with a fatalistic conviction that there can be no improvement along strictly nonoperative lines. After an experience of more than eleven years with a distinctly new type of splint, I assert with all emphasis that nothing is farther from the truth. These splints use unpadded plaster casts and, where needed, adjustably fitted padded rings, with connecting arms, slidable over one another to give the necessary distention. The casts and rings brace against bone structures adjacent to the fractured bone. Nonoperative skeletal traction and countertraction are obtained in the normal alinement of the bone. The fractured bone is not covered. If the fracture is compounded, it can be dressed without disturbing the splint. Better than with any extension table, as now used, extension with greater safety to the soft tissues is secured. In intracapsular fractures of the femur these splints will give reductions as good as or better than with any other method. The knee joint and the hip joint are movable at all times. The fracture is stabilized. The patients can be propped up in bed to any position of comfort. They do not die from the punishment of the treatment. Results in fractures of other bones are even more gratifying. With regard to fractures of both bones of the forearm and of the shaft of the humerus as shown here this morning, I expect to obtain apposition of the fragments as a matter of routine. T-fractures of the head of the humerus with dislocation of the head are a separate proposition. I would make a plea for a higher grade of mechanics than has been in use for so many ages. A better type of nonoperative skeletal traction is safer for surgeons generally.

DR. C. W. DURHAM, Jackson Springs, N. C.: Do you use something to make a drill hole through those fractures or do you just drive the pin in?

DR. F. J. GAENSLEN, Milwaukee: I am in accord with Dr. Orr when he recommends skeletal traction and incorporation of the traction device in the plaster cast. The method finds application in a great many locations. Böhler has called attention to the fact that in fractures of both bones of the forearm great care must be used to have the proper degree of traction on the lower fragments so that when the pin is driven through the lower fragments the styloid process of the radius and ulna will be on the proper level. He also emphasizes the need of exerting moderate pressure to bring the lower end of the radius and ulna close together to avoid relaxation of the lower radio-ulnar ligament. He has an assistant making powerful traction on the hand, a counterpull being provided by a broad belt brought around the upper arm and fastened to a hook in the wall. Instead of the heavier steel pin we have used the Kirschner wire apparatus, with the greatest satisfaction. The wires are very small in caliber, make small wounds, and do not cut through either bone or soft parts. The Kirschner apparatus should make a welcome addition to the armamentarium of every man doing fracture work.

DR. H. WINNETT ORR, Lincoln, Neb.: I was going to make the point that Dr. Gaenslen mentioned. I used to hammer the pins in. Now I use a drill pin, which I find more satisfactory, a soft steel pin which will not break. One can put it in with an ordinary drill and with the point the same caliber as the shaft. In order to keep the records of the section straight on the matter of splinting with such provision for frequent dressing as the previous speaker mentioned, I want to say that it is the opinion of many physicians that it is never necessary to splint with provision for frequent dressings in compound fractures.

TULAREMIA

REPORT OF A CASE, WITH POSTMORTEM OBSERVATIONS AND A NOTE ON THE STAINING OF BACTERIUM TULARENSE IN TISSUE SECTION *

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AND
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CINCINNATI

In a review of the literature on tularemia we have been able to find but eight cases in which the autopsy observations are reported. The first was put on record by Verbrycke [1] in 1924. His patient died eighteen days after the onset of the illness, and the lesions of tularemia were found in the lungs, spleen and lymph nodes. The next case was reported by Kolle and Wassermann.[2] This patient died twenty-six days after the onset of the illness, and the lesions were limited to the spleen. In 1927 Francis and Callender [3] described the case of a patient who died approximately five months after a presumptive exposure, and lesions were found in the lungs, liver, spleen and lymph nodes. In 1928 five more cases were reported. Bardon and Berdez [4] reported one in which the patient died sixteen days after the onset of the illness, and lesions were found in the liver, spleen and lungs. Goodpasture and House [5] made record of a patient who died eighteen

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1. Verbrycke, J. R., Jr.: Tularemia, with Report of Fatal Case Simulating Cholangeitis, with Postmortem Report, J. A. M. A. **82:** 1577-1581 (May 17) 1924.

2. Kolle, Wilhelm; and Wassermann, August: Handbuch der pathogenen Mikroorganismen, ed. 3, Jena, G. Fischer **6,** 1927.

3. Francis, E., and Callender, G. R.: Tularemia: Microscopic Changes of Lesion in Man, Arch. Path. & Lab. Med. **3:** 572-607 (April) 1927.

4. Bardon, Richard; and Berdez, George: Tularemia: Report of a Fatal Case, with Postmortem Observations, J. A. M. A. **90:** 1369-1371 (April 28) 1928.

5. Goodpasture, E. W., and House, S. J.: Pathologic Anatomy of Tularemia in Man, Am. J. Path. **4:** 213-226 (May) 1928.

days after exposure, and lesions were found in the liver, spleen and lymph nodes. They also described the histologic picture of the primary lesion on the finger. W. M. Simpson [6] reported a case in which the patient lived but four days after the onset of the illness. At autopsy, lesions were found in the spleen, liver and lymph nodes. Palmer and Hansmann [7] placed on

Fig. 1.—Multiple tularemic ulcers of fingers of left hand.

record a case in which the patient died eight days after the onset of the illness, and lesions were found in the lungs, spleen and lymph nodes, while a similar distribution of lesions was found in a case reported by Bunker and Smith,[8] their patient also dying eight days after the first appearance of the disease.

Because of certain unusual clinical features and the finding, for the first time, of lesions in organs other than the lungs, liver, spleen and lymph nodes, we present the following case. Furthermore, we believe it to be the first time that Bacterium tularense has been demonstrated in sections of human tissues:

History.—B. F., a white woman, aged 37, married, a housewife, was admitted to the Cincinnati General Hospital, Oct. 11, 1930, complaining of chills and fever and a sore finger on the left hand. The illness commenced rather suddenly, October 1, with severe chills and fever, general aching of the bones and vomiting. Twenty-fours hours after the beginning of the chill the patient felt a dull, aching pain in the entire left arm,

Fig. 2.—Liver with tularemic abscesses.

particularly in the axillary region. Soon she noticed a small papulopustular lesion of the left index finger. On the following day there was enlargement and tenderness of two or three of the left axillary lymph nodes. The lesion on the finger was lanced by the family physician, and the enlargement of the axillary lymph nodes gradually subsided. Three days after the appearance of the lesion on the index finger the patient noticed a similar lesion on the small finger of the same hand. This was followed by enlargement of the left epitrochlear lymph node. The fever continued, and she had repeated chills, sometimes two in a day. She came to the hospital ten days after the onset of the illness.

September 27, four days before the onset of the present illness, the patient was on a hunting trip with her husband and family in the south of Kentucky. Two or three rabbits were shot and dressed by the patient and her brother-in-law. So far as the patient knew, she had no abrasions of her hand at the time, nor did she cut her hand while dressing the animals. But the brother-in-law, who had a hang-nail, developed a papulopustular lesion of his finger and had mild chills and fever for a few days. These symptoms had ceased before the patient's admission to hospital.

The past history and the family history of the patient were irrelevant, except for the fact that a cousin died the preceding year of "rabbit fever," after an illness lasting seven days.

Examination.—The patient was well developed and well nourished, and apparently was acutely ill. The temperature was 103.6, the pulse 104, and respirations 26. The blood pressure was 110 systolic and 64 diastolic. The face was flushed. A small papulopustular lesion was present on the right side of the chest, near the costal margin, and another on the inner aspect of the right thigh. An ulcer, 1 cm. in diameter, with ragged edges, was seen on the index finger of the left hand,

Fig. 3.—Spleen with tularemic abscesses.

and a small pustule, 0.5 cm. in diameter on the little finger. One epitrochlear and one axillary lymph node were both enlarged to the size of a small marble and were firm and moderately tender. There was no other lymphadenopathy. There was no redness about the enlarged lymph nodes nor were there red streaks on the arm.

Examination of the chest showed a slightly impaired percussion note over the right base, with numerous fine crepitant râles over both bases and in the axillary regions. The remainder of the physical examination gave essentially negative results.

Before the patient entered the hospital another pustule developed on the middle finger of the left hand. The temperature fluctuated between 102 and 105 F. No chills occurred after admission. One week after admission there was rather marked respiratory distress, resembling that seen in pneumonia but without cough or expectoration. Physical examination of the chest showed numerous râles in the lower lobes both anteriorly and posteriorly. At the same time the abdomen became distended and a rather marked diarrhea developed which did not respond to treatment. The respiratory distress and diarrhea persisted, and the patient became irrational and finally comatose twenty-four hours before death. October 22 she died, twelve days after admission and twenty-two days after the onset of the disease.

As no specific therapy for this disease has been described, when the prognosis became desperate 200 cc. of convalescent serum, obtained from the patient's brother-in-law, was given intravenously in fractional doses, but apparently without benefit. It was ascertained subsequently that convalescent human serum had been used once in the Johns Hopkins Hospital, apparently with good results.

On admission the white blood count was 12,000, with a normal differential count. Forty-eight hours before death the white

6. Simpson, W. M.: Clinical and Pathological Study of Forty-Eight Nonfatal Cases and One Rapidly Fatal Case with Autopsy, Occurring in Dayton, Ohio, Ann. Int. Med. **1**: 1007-1059 (June) 1928.
7. Palmer, H. D., and Hansmann, G. H.: Tularemia: Report of a Fulminating Case with Necropsy, J. A. M. A. **91**: 236-239 (July 28) 1928.
8. Bunker, C. W. O., and Smith, E. E.: Tularemia: Report of Four Cases, One Fatal, with Autopsy Report, U. S. Nav. M. Bull. **26**: 901-911 (Oct.) 1928.

blood count was 4,000, with 88 per cent polymorphonuclears. Examination of the urine was negative except for a trace of albumin and a few granular casts. Blood culture was negative. The agglutination test, on blood taken during the second week of the disease, was positive at a dilution of 1:40. A guinea-pig, inoculated with whole blood taken from the patient on admission, died with the typical lesions of tularemia. Another guinea-pig, inoculated with pus recovered two days

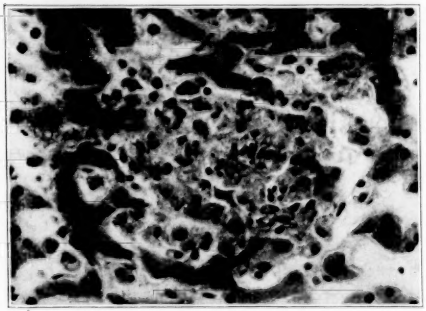

Fig. 4.—Section of liver, showing early tularemic lesion; reduced from a photomicrograph with a magnification of 800 diameters.

before death from the lesion on the middle finger, died six days after inoculation with lesions typical of tularemia. Bacterium tularense was recovered from the spleen in pure culture on coagulated egg yolk medium. This culture is still being carried on and is being used in other work which will be reported later by one of us. The Wassermann reaction was negative.

Pathologic Examination.—At autopsy, on external examination, the only noteworthy observations were necrotic ulcers on the palmar surface of the distal phalanges of the first, third and fourth fingers of the left hand (fig. 1). When the breast plate was removed, the contents of the thoracic cavity were presented in their normal relations. The lungs were bound down by numerous fibrinous and fibrous adhesions between the visceral and parietal pleurae, and between the parietal pleura, the pericardium and the diaphragm. The middle and lower lobes of the right lung and the lower lobe of the left lung presented numerous discrete or confluent, opaque, yellowish gray, caseous abscesses, with irregular cauliflower borders, varying from 1 to 3 cm. in diameter. The lower lobe of the right lung also presented an early lobular pneumonia, while that of the left lung showed moderate pulmonary congestion and edema. The hilar lymph nodes were moderately enlarged and presented numerous small abscesses similar to those seen in the lungs. The heart was not remarkable. The abdominal viscera were bound together by numerous superficial fibrinous adhesions which were easily broken, leaving the surface of the organs slightly dull and granular. The entire liver and spleen were studded with numerous yellowish, opaque, discrete or confluent abscesses with regular outlines, varying from 2 to 8 mm. in diameter (figs. 2 and 3). On external examination the kidneys appeared pale, swollen and flabby, and on cut section the cortices were irregularly thickened and the renal pyramids were unusually prominent. The lining of the entire gastro-enteric tract was a dull, dirty, grayish pink, and the blood vessels were markedly engorged. The serosal surface of the gastro-enteric tract was dull and granular, as previously mentioned. The pelvic organs were not remarkable except for the dull granular appearance of their serosal covering. The suprarenal glands appeared normal. The abdominal lymph nodes also appeared normal, both externally and on cut section. One enlarged epitrochlear lymph node was removed from the left arm and presented numerous abscesses similar to those seen in the hilar lymph nodes. The organs of the neck and the brain presented no noteworthy manifestations.

The anatomic diagnoses were subacute ulcers of the fingers of the left hand; multiple abscesses (tularemic) of the lungs, liver, spleen and lymph nodes; pulmonary congestion and edema with an early lobular pneumonia; fibrous and fibrinous pleuritis; fibrinous peritonitis; subacute enteritis, and toxic nephrosis.

Bacteriologic Examination.—At autopsy, material from the liver abscesses was collected by Prof. W. B. Wherry and inoculated into each of two guinea-pigs, into one cutaneously, after gentle scraping of the skin, and into the other subcutaneously. The one died on the seventh day and the other on the sixth day after inoculation. Both revealed the typical visceral lesions of guinea-pig tularemia. Pure cultures of Bacterium tularense were recovered on coagulated egg yolk from the spleen of each animal. Dermal inoculation of guinea-pigs with the growth from the egg yolk cultures produced death in six days with the characteristic plague-like visceral lesions.

Microscopic Examination.—The lungs showed discrete or confluent areas of caseous necrosis, with extensive nuclear fragmentation into numerous coarse and fine chromatin granules. In some of the larger and more advanced lesions there was moderate peripheral fibroblastic proliferation and monocytic reaction. The pulmonary tissue also showed moderate congestion and edema. A section from the lower lobe of the right lung showed a confluent lobular pneumonia in which the reaction was chiefly monocytic. The pleura was the site of moderate thickening, and an occasional polymorphonuclear leukocyte and monocyte were noted. In the liver were numerous large and small, discrete or confluent areas of caseous necrosis, with fragmentation of the nuclei into numerous coarse and fine chromatin granules. Surrounding these lesions there was a moderate monocytic reaction and some fibroblastic proliferation. Some of the younger lesions showed only a small focal area resembling caseous necrosis with scattered chromatin granules and an occasional monocyte (fig. 4). This organ also showed a moderate chronic passive congestion with atrophy of the liver cords and beginning fatty infiltration. The spleen, too, showed numerous areas of necrosis identical

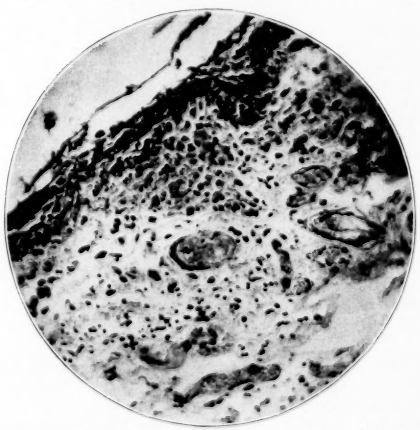

Fig. 5.—Section of serosa of intestine, showing early tularemic lesion; reduced from a photomicrograph with a magnification of 250 diameters.

with those seen in the liver, and likewise intense congestion. The regional lymph nodes contained numerous areas of focal necrosis with peripheral monocytic reaction and fibroblastic proliferation, similar to the lesions previously described. The lymph follicles showed moderate rarefaction and the medulla presented focal areas of hemorrhage. There was also a moderate increase of reticulum. The mucosal surface of the gastro-enteric tract presented moderate congestion of the blood vessels and an occasional focal area of polymorphonuclear

and lymphocytic infiltration. The serosal surface of the gastro-enteric tract presented a generalized diffuse reaction consisting chiefly of monocytes with an occasional polymorphonuclear leukocyte lying beneath a layer of fibrinous exudate. There were also focal areas of necrosis, chromatin granules and monocytic reaction, identical with the early lesions described in the liver, spleen, lung and lymph nodes (fig. 5). The uterus was not remarkable except for the presence of an exudate on its serosal surface similar to that noted on that of the intestine. No areas of necrosis were seen. Sections of the skin from the index finger showed a small subacute ulcer in which the chief reacting cell was the monocyte. There was also an occasional small area of caseous necrosis with a peripheral area of fibrosis and monocytic leukocytosis. The kidneys showed moderate congestion and edema, with an early acute focal glomerulonephritis. Sections from the bladder showed nothing noteworthy. In sections from the heart were small focal areas of fibrosis, and the muscle fibers appeared swollen and granular. The aorta appeared normal. The suprarenal glands were not remarkable, but there was a moderate monocytic infiltration of the surrounding fat tissue. There was moderate fibrosis and fatty invasion of the pancreas. The thyroid showed focal areas of chronic inflammation. Microscopic diagnoses

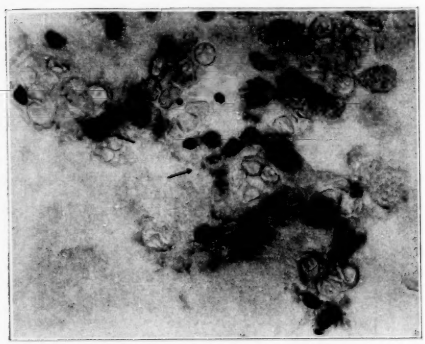

Fig. 6.—Section of lung, showing Bacterium tularense within a macrophage and also a free-lying group; nile blue sulphate stain; reduced from a photomicrograph with a magnification of 1,550 diameters.

were subacute ulcers (tularemic) of three fingers of the left hand, with multiple abscesses (tularemic) of the lungs, liver, spleen, regional lymph nodes and serosal surface of the gastro-enteric tract; fibrinopurulent peritonitis; pulmonary congestion and edema, with terminal lobular pneumonia; subacute and chronic pleuritis; moderate fibrosis of the myocardium and toxic myocardosis; chronic passive congestion of the liver, with atrophy of the liver cords; toxic nephrosis and acute focal glomerulonephritis; chronic focal thyroiditis, and subacute gastro-enteritis.

TISSUE STAINING

One of us (L. F.) is describing elsewhere a method for staining Bacterium tularense in tissue sections. The essential feature is the use of a saturated aqueous solution of nile blue sulphate. The contrast between the stained bacteria and the cellular background leaves much to be desired, especially for purposes of photography, but the bacteria are readily recognizable.

The chief difficulty in securing good demonstrations in human tissues seems to lie, however, not so much in the color of the dye as in the nature of the pathologic processes. In most of the involved tissues from this case there was an extensive karyorrhexis. Large and small nuclear fragments usually lie wherever the bacteria are found, and the recognition of bacteria in the presence of these fragments is difficult. Occasionally, as shown in the accompanying photomicrograph of the lung (fig. 6), the bacteria occur in free clumps or groups and also within phagocytic cells. The latter distribution is almost characteristic of infected rodent tissues.

Bodies that seem with certainty to be bacteria were found only in the lung. None were found in the lymph glands, kidneys, focal necroses of the intestines, liver, spleen, suprarenal gland, pancreas, heart muscle, aorta, stomach, gallbladder, urinary bladder or brain. These tissues were fixed in Zenker's solution.

SUMMARY

A case of tularemia is reported in which: (*a*) autoinoculation of two fingers of the left hand by contact with the primary lesion on the index finger seems to be highly probable; (*b*) the use of convalescent serum was without beneficial effects; (*c*) lesions of the peritoneum, both focal and diffuse, are described for the first time, and (*d*) a new staining method revealed the presence of Bacterium tularense in tissue sections from certain of the involved organs.

CALCIFICATION IN TUBERCULOSIS OF THE SUPRARENAL GLANDS

ROENTGENOGRAPHIC STUDY IN ADDISON'S DISEASE *

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Calcification has long been accepted as evidence of chronic or of healed tuberculous infection. Although other forms of inflammation may occasionally result in calcification, in cases of tuberculosis in which the healing process lags only a little behind the destructive action of the lesion, calcification is extremely common. This was recognized, particularly in regard to lesions of the lungs and the lymph nodes, long before the advent of roentgen rays. Although calcification is not entirely pathognomonic, it almost always indicates tuberculosis, so that in the minds of physicians calcification and tuberculosis are indissolubly associated, especially during the process of healing. It would seem rational, therefore, to assume that calcification might occur in the suprarenal glands of patients with Addison's disease, as the process is frequently tuberculous.

Our interest in the possibility of revealing calcification in the suprarenal glands was aroused in 1925 by a letter from Sir Byron Bramwell,[1] who wrote:

For more than fifty years I have been interested in Addison's disease, and four years ago I mentioned to Professor George Murray and my son, John Creighton, when going round the Manchester Royal Infirmary, that I thought the x-ray examination of the suprarenal region should disclose the ordinary tuberculous lesion of Addison's disease and would be consequently useful both for diagnosis and prognosis. So far as I have been able to ascertain from physicians and radiologists the

* From the Division of Medicine and the Section on Roentgenology, the Mayo Clinic.

* Material from thesis submitted by Dr. Ball to the Faculty of the Graduate School of the University of Minnesota in partial fulfilment of the requirements for the degree of Master of Science in Medicine, June, 1931.

1. Bramwell, Byron: Personal communication to Rowntree.

only case which has been published is one by Sir Humphry Rolleston[2] in the *British Journal of Children's Diseases*, March, 1914.

Since that time, we have studied numerous roentgenograms with the hope of recognizing the existence of calcification, but without success until, early this year, unexplained shadows corresponding to the region of the suprarenal gland were seen in a roentgenogram taken in a case of Addison's disease.[3]

EVIDENCE OF FREQUENCY OF TUBERCULOSIS AND CALCIFICATION OF SUPRARENAL GLANDS IN ADDISON'S DISEASE

Addison,[4] in his original monograph, reported eleven cases in which necropsy revealed definite pathologic changes in the suprarenal capsules, such as "mottled with tuberculosis," "of a scrofulous nature," "cancerous deposit," and "exceedingly small and atrophied glands." With regard to his first case he said: "The suprarenal capsules were diseased on both sides, the left about the size of a hen's egg, with the head of the pancreas firmly tied down to it by adhesions." Both capsules were "as hard as stones." The accuracy of these observations of the pathologic changes which serve as etiologic factors in Addison's disease is borne out by present-day investigations, and had the rays been available in Addison's day, no doubt he would have described roentgenographic changes in his first case.

Wilks[5] denied the tuberculous nature of Addison's disease, claiming that it in itself represented a disease. Time, however, has proved the correctness of Addison's ideas as applied to most cases. The mycobacterium of tuberculosis has been revealed in sections of strumous suprarenal glands taken from a patient who had Addison's disease but whose other tissues and organs were free from tuberculosis.

Guttman,[6] in a review of a series of 566 cases of Addison's disease, found tuberculosis of the suprarenal gland to be the etiologic factor in 69.72 per cent. He recorded, in order of frequency, changes in the suprarenal glands as follows: (1) bilateral tuberculosis, (2) atrophy, (3) amyloid disease, (4) neoplasms, (5) vascular lesions, (6) fatty degeneration and (7) pyogenic infections. As rare possibilities he enumerated syphilis, metastatic lesions, pressure atrophy, hypoplasia, trauma, metaplasia of bone marrow, and so forth.

Barker[7] of the Mayo Clinic, reported on the pathologic anatomy of the suprarenal glands in twenty-eight cases in which the clinical syndrome of Addison's disease had been present. In twenty-five of these (89 per cent) the lesion was found to be tuberculous on histologic examination, and in the remaining three (11 per cent) it was found to be advanced atrophy. Our necropsy material obtained in thirty-four cases of Addison's disease revealed tuberculosis of the suprarenal glands in approximately 83 per cent.

That tuberculous lesions predominate seems unquestioned. Rolleston considered them to be "the only common cause of Addison's disease . . . the others, with the exception of simple atrophy, may be considered as very rare." Wells[8] estimated that 90 per cent of the cases of Addison's disease are the result of tuberculous destruction of the suprarenal glands and that 10 per cent are the result of atrophy.

Reports in the literature of gross calcification of the suprarenal glands in Addison's disease are not common, and the incidence in large series of cases is not given. Most textbooks on pathology admit the occurrence of calcification. In 1871, Quain,[9] in support of tuberculosis as an etiologic factor, reported the pathologic data in a case of Addison's disease as follows: "The kidneys were healthy, and to them adhered firmly the suprarenal capsules, which were cemented into a hard, calcareous mass on both sides. The condition of the calcified masses in the lungs and in the suprarenal capsules was as nearly as possible identical." Of another case of Addison's disease, seen in the same year, he remarked, "The suprarenal capsules were cretaceous."

In 1899, Bramwell[10] wrote of the pathology of Addison's disease: "In some cases gritty calcareous nodules are present in the midst of the caseous material. In long standing cases the whole capsule may be converted into a cheesy, putty-like or calcareous mass."

Seligman,[11] in 1928, reported the occurrence of four cases of suprarenal calcification in reviewing 1,185 postmortem examinations. In none of the cases had Addison's disease been diagnosed. In forty-six cases of tuberculosis of the suprarenal glands, calcification was not noted. Seligman concluded that the etiologic factor for calcification of the suprarenal glands had not been established. From this standpoint, the comparative frequency of suprarenal calcification in cats, which has been emphasized by Brüschweiler[12] and by Marine,[13] may be considered. The latter stated that the condition is always calcification, and never ossification, and that it occurs more commonly in young animals which have had distemper. The symptoms resemble those seen in suprarenalectomized cats. Marine has expressed the view that a specific toxin of distemper may produce focal degeneration and necrosis, with subsequent deposits, first of fatty compounds, which later change to carbonate and phosphate. The possibility of a specific toxin affecting the suprarenal glands in Addison's disease has been considered previously.

In Barker's report, gross calcification was associated with tuberculosis of the gland in one case; about half the substance of both glands was replaced by calcium salts.

Guttman, in his description of the usual tuberculous lesion which he found in the suprarenal glands, stated that calcification is not uncommonly seen and that formation of bone has been described.

Woolley[14] has reported heteroplastic bone and the formation of the bone marrow associated with tuberculosis in the suprarenal gland in cases of generalized

2. Rolleston, H. D., and Boyd, E. J.: Addison's Disease in a Boy, with Calcification of the Adrenals, with Remarks, Brit. J. Child. Dis. **11**: 105-111 (March) 1914.

3. Ball, R. G., and Lansbury, John: The Treatment of a Case of Addison's Disease with the Cortical Hormone of Swingle and Pfiffner, Canad. M. A. J. **24**: 695-697 (May) 1931.

4. Addison, Thomas: A Collection of the Published Writings of Thomas Addison, London, New Sydenham Society, 1868.

5. Wilks, Samuel: On Disease of the Suprarenal Capsules; or Morbus Addisonii, Guy's Hosp. Rep. **8**: 1-63, 1862.

6. Guttman, P. H.: Addison's Disease, Arch. Path. & Lab. Med. **10**: 895-935 (Dec.) 1930.

7. Barker, N. W.: The Pathologic Anatomy in Twenty-Eight Cases of Addison's Disease, Arch. Path. & Lab. Med. **8**: 432-450 (Sept.) 1929.

8. Wells, H. C.: Addison's Disease with Selective Destruction of the Suprarenal Cortex, Arch. Path. & Lab. Med. **10**: 499-523 (Oct.) 1930.

9. Quain, Richard: Addison's Disease, Tr. Path. Soc. London **22**: 280-281, 1871.

10. Bramwell, Byron: Anemia and Some of the Diseases of the Blood Organs and Ductless Glands, Philadelphia, P. B. Blakiston's Son & Co., 1899.

11. Seligman, Bernard: Calcification of the Suprarenal Gland, Am. J. Path. **4**: 457-461 (Sept.) 1928.

12. Brüschweiler, H. P.: Ueber die Verkalkungen der Nebenniere der Katze, Virchows Arch. f. path. Anat. **255**: 494-503, 1925.

13. Marine, David: Calcification of the Suprarenal Glands of Cats, J. Exper. Med. **43**: 495-499 (April) 1926.

14. Woolley, P. G.: Heteroplastic Bone and Bone Marrow Formation Associated with Tuberculosis in the Adrenal, J. Lab. & Clin. Med. **1**: 502-508 (April) 1916.

miliary tuberculosis. A case is reported by Newsam [15] of a girl, aged 2 years and 7 months, who had not suffered from faulty development or serious illness until she suddenly went into coma and had convulsions of a clonic type which involved all the extremities, the body

Fig. 1.—Calcification in tuberculous suprarenal gland.

and the face. Incontinence and vomiting were also present, without apparent cause. Death followed, after many convulsions, in about fourteen hours. At necropsy, inspection of the suprarenal glands indicated that very little of the cortex remained, and that the entire medulla was replaced by calcified material. In the normal situation of the medulla there were deposits of calcium salts and also spicules of bone and bone marrow containing blood-forming cells. In certain places, the deposits of calcium salts were being replaced by bone.

Although many cases of calcification of the suprarenal glands have been reported as the result of tuberculous lesions, data have not been presented to indicate the incidence of association of these two conditions. Examination of the fresh tissue at necropsy ordinarily will disclose only gross calcareous deposits. Histologic examination ordinarily is confined to small blocks of tissue, and unless serial sections of the entire gland are made, small areas of calcification are readily overlooked. Roentgenographic examination is the best method for demonstration of calcification in soft tissues. In doubtful cases, portions in which there is increased density may then be removed, and the presence of calcification may be proved by histologic or by chemical examination. Therefore we have applied this method to study of the material available in the Mayo Clinic.

STUDY OF MATERIAL AT THE MAYO CLINIC

Pathologic Data.—The suprarenal glands were obtained in thirty-four cases which had been listed by the pathologists either as Addison's disease or as tuberculosis of the suprarenal glands. A positive clinical diagnosis of Addison's disease had been made in twenty-three of the cases, and a diagnosis of questionable Addison's disease was made in three other cases. In the remaining eight cases there were tuberculous lesions of one type or another (table 1). The presence of calcification was determined by histologic examination (fig. 1). A second group of suprarenal glands, which had been both grossly and histologically adjudged to be normal was also observed.

Roentgenologic Data.—Both groups were then subjected to roentgenologic examination. Calcification or areas of increased density were not shown in the normal glands. In the pathologic glands there was wide variation in density, with very obvious calcification in certain cases (fig. 2).

TABLE 1.—*Summary of Material Studied at the Mayo Clinic*

Clinical Diagnosis	Cases	Increased Density in Roentgenograms of Suprarenal Glands Obtained After Death
Addison's disease	23	6
Questionable Addison's disease	3	2
Tuberculous meningitis	2	..
Papilloma of bladder	1	1
Syphilis of the central nervous system; healed tuberculous pleuritis and lymphadenitis	1	1
Pulmonary tuberculosis	1	..
Acute suppurative pancreatitis and peritonitis; healed tuberculosis of the lungs	1	1
Tuberculous pericarditis	1	..
Tuberculosis of the right kidney	1	..
Total	34	11

In some glands there were distinct, isolated shadows indicative of sharply localized calcification. In others

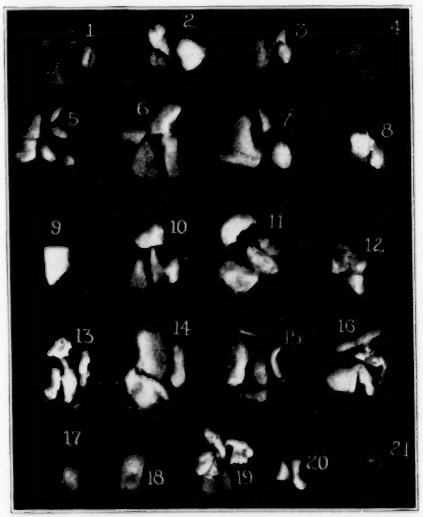

Fig. 2.—Increased density to roentgen rays in portions of nine of twenty-one suprarenal glands. The suggested roentgenologic diagnosis of caseation or calcification was confirmed by histologic and chemical studies. Specimens 2, 3, 7, 8, 10, 13, 16, 20 and 21 were recorded as roentgenologically positive.

there was increase in density throughout the tissue, suggesting a diffuse deposition of lime salts such as could be expected with a high grade of caseation. These features were confirmed by histologic examination of the tissues, as shown in figure 1.

15. Newsam, A. R.: Calcification and Bone Formation in the Adrenals, Rhode Island M. J. **7**: 35-38 (March) 1924; abstr. J. A. M. A. **82**: 1397 (April 26) 1924.

In reviewing the roentgenograms, only those glands were called positive in which in our opinion it should have been possible to demonstrate increased density during life. It is of interest that in several additional glands there were definite minute calcified portions, which, however, could not in all probability have been demonstrated in life.

TABLE 2.—*Chemical Analysis of Specimens of Nine Normal Suprarenal Glands*

Water, per Cent	Ash, per Cent		Calcium, Mg. in Each 100 Gm.			Phosphorus, Mg. in Each 100 Gm.			Calcium: Phosphorus Ratio
	Wet Wt.	Dry Wt.	Wet Wt.	Dry Wt.	Ash	Wet Wt.	Dry Wt.	Ash	
72.8	0.25	0.93	30	111	12.0	50	183	20.0	0.60
75.7	0.37	1.54	90	370	24.3	100	413	27.0	0.90
80.9	0.33	1.71	64	336	19.4	76	398	22.5	0.84
77.4	0.43	1.90	57	252	13.3	107	477	24.9	0.53
75.5	0.58	2.37	176	717	30.2	99	407	17.1	1.76
80.1	0.50	2.48							
83.4	0.41	2.49	62	371	15.1	101	604	24.6	0.61
82.0	0.50	2.77	99	550	19.8	120	668	24.0	0.82
83.0	0.47	2.77	69	406	14.7	113	664	24.0	0.61

Of the cases in which material was obtained at necropsy, there were twenty-three in which a positive diagnosis of Addison's disease had been made. In six of these, the glands were roentgenographically positive, an incidence of approximately 26 per cent. Of the three cases in which the diagnosis of Addison's disease had been given as questionable, the glands in two were positive, and of the remaining group of patients with miscellaneous tuberculous lesions, the glands of three were positive. There was a total, then, of eleven cases (32.3 per cent) in the entire group of thirty-four cases with roentgenographic evidence of

98
32

make correction for consequent changes in the water content of the tissue, or for the extraction of salts by solution of formaldehyde. Results for the percentage of ash, calcium and phosphate are reported in terms of the weight of the fixed tissue, the dry weight and the ash. Table 2 shows that, in normal tissues, phosphates are present in considerably greater amounts than is calcium; the maximal amount of either is 700 mg. in each 100 Gm. dry weight, with a maximal content of ash of 2.77 per cent.

The chemical analysis of representative portions of twenty-four tuberculous glands studied (table 3) indicated that the composition of fourteen fell within these normal limits. In ten glands the percentage of ash was excessive. In one of the glands in which a calcareous nodule had been dissected out for study, the content of ash increased up to 73.9 per cent of the dry weight of the tissue. In the cases in which the total ash was increased, the calcium-phosphorus ratio varied from 1.85 to 2.28, which is approximately that found in calcium phosphate and in bone. With one exception there were portions of increased density on roentgenologic examination of these ten glands. In addition, there were three other cases in which the roentgenogram gave evidence of small, localized deposits, but these apparently were too small to produce a change in the chemical composition of the gland as a whole.

ROENTGENOGRAPHIC EVIDENCE, IN LIFE, OF SUPRARENAL CALCIFICATION IN ADDISON'S DISEASE

Our observations indicated the presence of calcification in approximately a third of tuberculous suprarenal glands. This immediately raises the question of the roentgenologic demonstration during life from the standpoint of diagnosis and prognosis. In this connec-

TABLE 3.—*Chemical Analysis of Specimens of Twenty-Four Diseased Suprarenal Glands*

Water, per Cent	Ash, per Cent		Calcium, Mg. in Each 100 Gm.			Phosphorus, Mg. in Each 100 Gm.			Calcium: Phosphorus Ratio	Evidence of Calcification in Roentgenograms of the Suprarenal Gland
	Wet Weight	Dry Weight	Wet Weight	Dry Weight	Ash	Wet Weight	Dry Weight	Ash		
75.6	0.20	0.81	42	171	21.0	26	107	13.0	1.60	No
77.2	0.19	0.83	31	142	16.5	43	189	22.6	0.75	Yes
70.8	0.36	1.22	36	122	19.9	72	246	20.0	0.50	No
80.2	0.24	1.22	28	139	11.6	56	279	23.2	0.50	No
72.0	0.44	1.58	136	477	31.0	56	201	13.1	2.37	No
74.3	0.40	1.56	94	364	23.5	74	287	18.5	1.27	No
77.6	0.43	1.90	111	492	25.4	100	445	23.3	1.11	No
80.2	0.38	1.92	93	473	24.5	53	279	14.5	1.70	Yes
77.8	0.48	2.16	125	556	26.1	95	425	19.7	1.31	Yes
79.3	0.46	2.23	71	344	15.5	67	326	14.7	1.06	No
81.3	0.48	2.56	78	419	16.3	114	612	23.8	0.69	No
74.0	0.71	2.65	233	864	32.8	102	379	14.4	2.28	No
87.8	0.33	2.69	32	258	9.5	75	617	22.8	0.42	No
81.6	0.50	2.73	112	611	22.4	112	611	22.4	1.00	No
69.2	1.02	3.36	324	1,063	31.8	175	574	17.1	1.85	Yes
71.8	0.98	3.48	320	1,130	22.7	155	550	15.8	2.05	No
75.2	2.34	8.70	797	2,970	34.1	407	1,520	17.4	1.95	Yes
75.3	2.22	9.00	751	3,050	33.8	385	1,560	17.3	1.93	Yes
73.1	2.64	9.85	913	3,400	34.4	425	1,584	16.1	2.14	Yes
75.0	3.88	15.5	1,334	5,340	34.4	667	2,670	17.2	2.00	Yes
71.5	8.46	29.7	3,150	11,050	37.2	1,025	5,350	18.0	2.07	Yes
64.2	11.7	32.9	3,410	11,200	29.2	2,080	5,850	17.8	1.92	Yes
50.8	30.8	62.9	12,120	24,660	39.4	5,310	10,800	17.2	2.28	Yes
32.3	50.0	73.9	19,300	28,400	34.6	8,520	12,600	17.0	2.27	Yes

pathologic change in the suprarenal glands, which it seemed reasonable to suppose might have been demonstrated in the living patient if careful studies had been made. Unfortunately, roentgenograms covering the region of the suprarenal glands either had not been taken or were reported negative in routine examinations, and consequently were not preserved for review.

Chemical Data.—That the increase in density of the shadow in the roentgenograms was due to the deposition of calcium salts was further shown by chemical examination of whole glands. The material had been fixed in formaldehyde, and hence it was not possible to

tion the literature reveals that Rolleston and Boyd in 1914 first observed calcification in the region of the suprarenal glands in a boy, aged 12 years and 9 months, whose history of pigmentation and symptoms dated from ten to twelve months prior to the time of examination. The roentgenographic report, by Melville, reads: "There are very definite calcareous particles in the region of the last rib and suprarenal body on the right side, less definite on the left. There are discrete and dense opacities at the hila of the lungs, suggesting calcified nodules." Rolleston in his discussion of the case expressed the opinion that the suprarenal calcifica-

tion pointed to obsolete tuberculosis and that this was in accordance with the negative Pirquet reaction which was obtained. He further presumed that the cicatricial contraction in the calcifying suprarenal glands, rather than active tuberculosis, was responsible for the recent appearance of symptoms of Addison's disease.

In 1928, Gellerstedt and Hjelm [16] reported the case of a boy, aged 6 years, in whom they observed roentgenographically a fine coral-like shadow of calcification

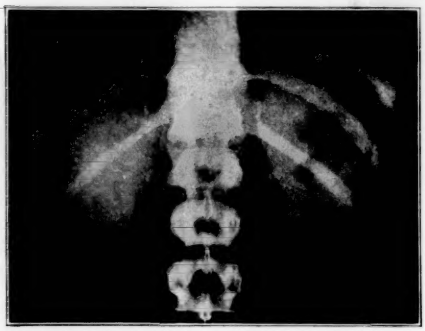

Fig. 3 (case 1).—Shadows in regions of left and of right suprarenal glands.

above the right kidney. At necropsy the deposit of calcium was found to be present in a ganglioneuroma of the suprarenal gland.

In 1930, Pescatori [17] reported a case with the clinical syndrome of Addison's disease, in which he was able to demonstrate in the roentgenogram what appeared to be small deposits of calcium salts in the left suprarenal gland. In this article he cited two cases of Addison's disease reported by Perussia, in which suprarenal shadows of calcification were observed. In one of these cases the calcification of the suprarenal gland was confirmed at necropsy.

Additional cases of Addison's disease, in which the roentgenogram contained shadows in the region of the suprarenal glands, have been reported by Thompson,[18] by Schatzki,[19] and by us.[20] Since our first report, we have been informed of similar observations by Snapper,[21] Allbright [22] and Bell.[23]

It is our purpose to present six additional cases of Addison's disease in which roentgenographic shadows in the region of one or of both suprarenal glands have been observed. Detailed accounts of these cases and their response to treatment have been previously reported by us.[24]

16. Gellerstedt, H., and Hjelm, R.: Zur Kasuistik der Nebennierentumoren, Uppsala Läkaref. Förh. **34:** 271-288 (June) 1929.

17. Pescatori, G.: Valore della esplorazione radiologica delle ghiandole surrenali nella malattia di Addison, Arch. di. radiol. **6:** 364-372 (March-April) 1930.

18. Thompson, T.: Addison's Disease: Value of Radiography in Direct Diagnosis, Lancet **2:** 785-787 (Oct. 11) 1930.

19. Schatzki, R.: Röntgen-diagnose der Nebennierentuberkulose, Röntgenpraxis **2:** 1130-1132 (Dec. 15) 1930.

20. Greene, C. H.; Rowntree, L. G.; Swingle, W. W., and Pfiffner, J. J.: Metabolic Studies in Addison's Disease: The Effect of Treatment with the Cortical Hormone of the Suprarenal Gland, Am. J. M. Sc., January, 1932.

21. Snapper: Personal communication to the authors.

22. Allbright: Personal communication to the authors.

23. Bell: Personal communication to the authors.

24. Rowntree, L. G.; Greene, C. H.; Ball, R. G.; Swingle, W. W., and Pfiffner, J. J.: Treatment of Addison's Disease with the Cortical Hormone of the Suprarenal Gland: Summary of Immediate Results in Twenty Cases Treated with the Preparation Made by Swingle and Pfiffner, J. A. M. A. **97:** 1446 (Nov. 14) 1931.

REPORT OF CASES

CASE 1.—A man, aged 20, who was admitted to the Mayo Clinic, Dec. 31, 1930, complaining of weakness and pigmentation of the skin, appeared to be exhausted. The skin was of a light olive color, with darker, mottled areas on the exposed surfaces, about the pelvic girdle, and on the extensor aspect of the arms. The nipples were almost black, and the genitalia and anus were deeply pigmented. There were a few scattered freckles, and some pigmented areas on the palms, soles and buccal mucous membrane. The skin was smooth, unwrinkled, and of a silky texture. Roentgenograms of the thorax gave evidence of old tuberculosis of the right upper lobe. In roentgenograms of the kidneys there were bilateral shadows in the suprarenal regions (fig. 3). A clinical diagnosis of Addison's disease was made.

CASE 2.—A man, aged 45, who came to the clinic with the chief complaint of having felt exhaustion for two or three years, was poorly nourished and had marked, diffuse pigmentation of the skin. There was increased mottling and freckling on the exposed surfaces, and a great deal of pigmentation around the lips and mouth. Roentgenographic examination disclosed well marked bilateral shadows in the region of the suprarenal glands (fig. 4). A clinical diagnosis of Addison's disease was made.

CASE 3.—A woman, aged 62, brought to the clinic by her son, a physician, who had made a diagnosis of Addison's disease, had been in good health until nine months before, when darkening of the skin over the face and hands had been noted by her husband. She was poorly nourished, with deep brownish-olive pigmentation of the entire skin, somewhat deeper over the exposed surfaces. There were a few dark brown scattered freckles. The buccal mucous membrane contained numerous patches of brown pigment.

Roentgenologic studies of the thorax gave negative results, but roentgenograms of the region of the suprarenal glands disclosed a definite shadow on the right side (fig. 5).

CASE 4.—A man, aged 26, who was admitted with a complaint of weakness and dyspnea on exertion, was well developed, with diffuse, olive tan pigmentation over the entire body, and a deeper brown coloring of the nipples, genitalia, axillae, and an abdominal surgical scar. Pigmentation of the mucous membrane of the mouth could not be found. Numerous scattered

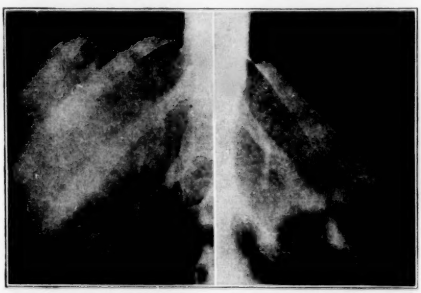

Fig. 4 (case 2).—Shadows in regions of left and of right suprarenal glands.

brown and black freckles were present over the face and arms, and a small area of brownish pigmentation was seen in the sclera of the right eye. Roentgenograms of the region of the suprarenal glands disclosed no abnormality on the left side but a small area of increased density on the right (fig. 6).

CASE 5.—A man, aged 49, who came to the clinic complaining of fatigue and generalized brownish pigmentation of the skin, presented definite accentuation of the color about the genitalia, anus and axillae. There was diffuse pigmentation of the mucous membrane of the mouth and scattered areas on the lips. Numerous black freckles were present, particularly over

the arms. A faint roentgenologic shadow of calcification was apparent in the region of the left suprarenal gland, with less distinct calcification on the right (fig. 7).

CASE 6.—A woman, aged 22, who came to the clinic complaining of weakness, periods of nausea with some vomiting, and marked brownish pigmentation of the skin, had considered herself in excellent health until four months previously. Examination disclosed diffuse cutaneous pigmentation, which was accentuated about the genitalia, anus, axillae and nipples, and points of pressure on the feet. Patches of pigmentation were

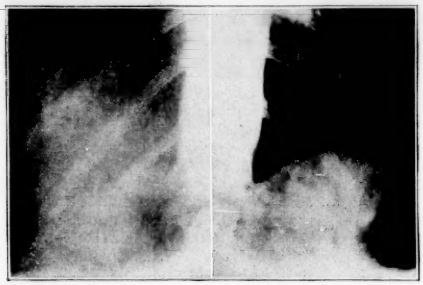

Fig. 5 (case 3).—No shadow in left suprarenal region, but shadow present in corresponding region on right side.

present on the lips, gums and buccal mucous membrane. The systolic blood pressure was recorded as 75 and the diastolic as 55 mm. of mercury. A clinical diagnosis of Addison's disease was made. Roentgenograms of the suprarenal regions revealed marked bilateral calcification (fig. 8).

ROENTGENOSCOPIC OBSERVATION, IN LIFE, OF SUPRARENAL CALCIFICATION IN ADDISON'S DISEASE

Calcification in the suprarenal regions was very distinct in the roentgenograms of case 6. Study of the roentgenograms suggested the possibility, not only of determining the normal range of motion of these glands, but also of their observation under the roentgenoscope. A roentgenogram was taken during expiration with the patient lying on her back. The gland on the right side was somewhat lower than that on the left, the upper border appearing at the level of the middle portion of the twelfth thoracic vertebra, the lower border extending down to the middle portion of the body of the first lumbar vertebra. The medial border was in juxtaposition to the spine. The gland on the left side lay 1.5 cm. higher, with its medial border along the lateral edge of the psoas muscle. During deep inspiration both glands descended 2 cm. caudally.

The patient was observed under the roentgenoscope. The left suprarenal gland could not be distinguished with certainty, but the right was distinctly seen. It was observed to descend caudally during inspiration and to ascend to its original position with expiration. The movement of the gland during the respiratory cycle was marked on the roentgenoscopic screen and traced on paper. The position of the gland and the extent of its movement corresponded precisely with that observed in the roentgenograms.

This, so far as we know, is the first time that the suprarenal gland has been observed fluoroscopically. Because of the calcification in this patient with Addison's disease, we were able not only to visualize the gland, but also to determine the change in its position during inspiration and expiration.

ROENTGENOGRAPHIC EVIDENCE OF SUPRARENAL CALCIFICATION WITHOUT ADDISON'S DISEASE

In order to ascertain the incidence of shadows in the region of the suprarenal glands in the absence of Addison's disease or of tuberculosis, a series of 300 roentgenograms of patients of varying ages, and with miscellaneous complaints, was carefully reviewed. In one instance a shadow was observed in the region of the left suprarenal gland. The patient was a man, aged 23, whose condition had been diagnosed as "functional enuresis" and dipsomania. No mention was made of pigmentation, exhaustion or gastro-intestinal complaints. Tuberculous lesions were not found. The blood pressure was 100 systolic and 70 diastolic.

A roentgenogram of a patient suffering from disease of the gallbladder and from obesity was recently called to our attention. There was what appeared to be a definite area of increased density in the right suprarenal region. A clinical diagnosis of Addison's disease could not be made. However, because of the evidence of a lesion in the region of the right suprarenal gland, this patient might be considered as being in the preclinical stage of Addison's disease stressed by Rowntree, Greene, Swingle and Pfiffner. We have previously pointed out the danger of operative and surgical procedures of any kind in a case of Addison's disease. In cases such as this, evidence of lesions of suprarenal glands must be considered in evaluating the operative risk, and, if operation should be undertaken, a prophylactic or supporting course of treatment with cortical hormone would be desirable.

Because of the intimate association of tuberculosis elsewhere with similar lesions in the suprarenal glands, a group of 100 pyelograms of tuberculous kidneys was studied. In one case a shadow was seen in the region of the left suprarenal gland; the patient, aged 41, had tuberculosis of the left kidney and old pulmonary tuberculosis. There was nothing in the history to

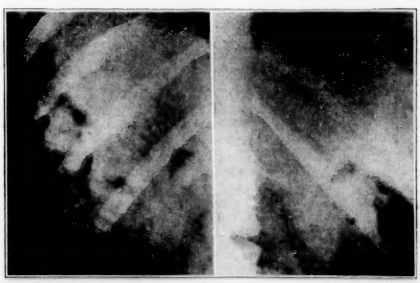

Fig. 6 (case 4).—No shadow in left suprarenal region, but small shadow in corresponding region on right side.

suggest suprarenal insufficiency. Left nephrectomy was performed and convalescence was satisfactory, which emphasizes the fact that a unilateral lesion does not necessarily mean suprarenal insufficiency.

The roentgenograms of thirty-five patients with Pott's disease of the spine were also reviewed, and in this group no shadows in the region of the suprarenal glands were observed.

We report a fourth case, which is interesting because, from the clinical standpoint, pathologic changes in the

suprarenal glands were suspected, and when roentgenograms were obtained there was evidence of increased density on the right side:

A woman, aged 25, who came to the clinic with a chief complaint of headache and head noises had undergone thyroidectomy three months prior to admission, although no history of hyperthyroidism could be elicited. Since the operation, she had complained of a variety of bizarre sensations but particularly of headaches and head noises. The headache was described as a sensation of pressure, practically constant, which

Fig. 7 (case 5).—Shadow in the left suprarenal region; no shadow in corresponding region on right side.

involved the entire head. The head noises were likened to whistling, the ringing of curfew bells, or a roaring sound. She had a very definitely masculine appearance. Her mother, when questioned, felt that she could not be sure that the patient had become so recently, but she was positive that the growth of hair about the breasts and abdomen had developed in the last five years. Menstruation had begun at the age of 12 years and had been normal until two years prior to admission, but flow had been very scanty since. The mother stated that the girl had always been quiet and studious, had had no interest in boys, and from an early age wanted to enter the convent. There were many coarse black hairs over the jaw, chin and upper lip. The breasts were small and the nipples surrounded with hair. The pubic hair was thick and coarse, of masculine distribution, and extended in the median line to the umbilicus. The forearms and legs were also hairy. There was no abnormality of the external genitalia. The skin was dry and flaky. A scar left after thyroidectomy was present, and no thyroid gland could be palpated. The right ear appeared to be totally deaf, and hearing in the left ear was markedly diminished. Examination of the eyes gave negative results. A right rectus operative scar was present. An indistinct mass could be palpated in both renal regions but could not be identified; there was definite tenderness on the left side. The reflexes were active. Neurologic examination was essentially negative. The patient apparently suffered from an anxiety neurosis.

Urinalysis and the Wassermann test of the blood gave negative results. The number of erythrocytes and leukocytes and the chemical values of the blood were repeatedly normal. The basal metabolic rate ranged from —15 to —5. Testing of the renal function gave satisfactory results. Roentgenograms of the head and thorax were negative. Roentgenograms of the kidneys, ureter and bladder disclosed sacralization of the last lumbar vertebra on both sides, and spina bifida occulta of the sacral segment. The kidney shadows were of normal size. A roentgenogram of the suprarenal areas revealed increased density in the region of the right suprarenal gland. This raised the question of a possible tumor of the suprarenal gland, but the severity of symptoms did not warrant immediate exploration.

COMMENT

It would appear from our study that lesions of the suprarenal glands are roentgenographically demonstrable in a certain proportion of cases in which there is tuberculous involvement. The more chronic pathologic changes, with fibrocaseation or calcification, appear to be most easily demonstrated roentgenologically. In the majority of cases the active disease process probably destroys sufficient cortical tissue to cause death before fibrocaseation or calcification occurs. In the cases of Addison's disease due to simple cortical atrophy, the roentgenograms obviously would be negative. From a clinical consideration of the group of cases that is sometimes called "borderline" or "questionable" Addison's disease, positive roentgenographic evidence would be a valuable link in the chain. It would seem advisable, in that group of cases in which many symptoms of Addison's disease are present and yet in which the clinician hesitates to make a diagnosis of Addison's disease, carefully to study the suprarenal region roentgenologically.

Roentgenologic demonstration of calcification in the region of the suprarenal glands may be of diagnostic significance in a case of suspected or questionable Addison's disease. On the other hand, it must be remembered, as shown in table 1, that suprarenal tuberculosis of marked degree, especially if unilateral, may be present without sufficient clinical evidence of suprarenal insufficiency to warrant a diagnosis of Addison's disease.

In cases in which the diagnosis of Addison's disease is unquestioned and there is a definite history or evidence of tuberculous infection, the lesion in the suprarenal glands is almost certainly of a tuberculous nature. It has been observed, by Rolleston and by Bramwell, that the cases with active tuberculous etiology respond less satisfactorily to treatment than do those with simple atrophy. This is the impression we have obtained. If active lesions are present in the lungs, we attempt to arrest or heal them. A similar attempt might be considered in regard to the suprarenal glands, although Rolleston's case should be kept in mind, in

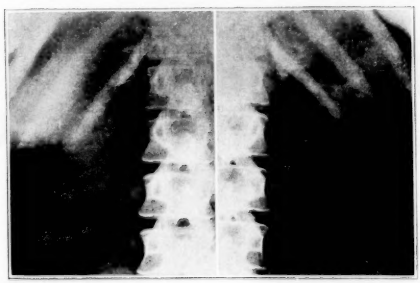

Fig. 8 (case 6).—Calcification in right and in left suprarenal regions.

which the cortical insufficiency was attributed to cicatricial contraction in the calcifying glands. Final conclusions cannot be drawn from observation of only six cases, but the advisability of attempting to promote healing by means of such measures as a dietary regimen, viosterol, calcium, the judicious use of parathyroid extract or roentgen rays is to be considered. The results might be studied by making roentgenograms of the suprarenal regions during and after treatment.

In reporting six cases of Addison's disease with roentgenographic shadows in the region of the supra-

renal glands, we hope that further interest will be aroused in the subject. From a study of the available pathologic material it appears probable that in a considerable percentage of cases calcification is present and that this can be roentgenologically demonstrated in life. It is suggested that such a demonstration may be of diagnostic and prognostic significance, and it is urged that roentgenographic studies be made in cases of suspected or proved Addison's disease.

DIVERTICULA OF STOMACH AND SMALL INTESTINE *

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Gastric diverticulum is a rare condition but does occur, about forty-five cases having been reported in the literature. The majority have been found on the posterior wall of the stomach, close to the lesser curvature and the cardio-esophageal juncture and in such a position are as a rule inaccessible to surgical treatment. A small percentage have been found close to the pylorus on the posterior wall. Only one case has been reported on the greater curvature, and one on the anterior surface of the stomach. The condition causes distress simulating a gastric ulcer, and the diagnosis depends on thorough fluoroscopic examination.

Because of the inherent tendency of irritative lesions of the stomach to develop into malignant conditions, and because of the fact that three cases at least of carcinoma developing in diverticula have been reported the condition should undoubtedly be dealt with surgically if it can be readily approached. Otherwise, a dietary regimen must be relied on.

MECKEL'S DIVERTICULUM

I will point out briefly the advisability of searching for Meckel's diverticulum at operation in all patients with atypical abdominal distress, particularly in interval appendectomies and in upper abdominal procedures in which the symptoms point to a small bowel problem but in which at operation not enough pathologic change is found to account for the patient's history of distress. I recently experienced the pleasure of finding a large, inflamed Meckel's diverticulum in a patient explored for atypical discomfort in the upper part of the abdomen, but without any pathologic condition being found until the small bowel was followed down, and an acutely involved Meckel's diverticulum was found. A careful history of the symptoms will often point to such a possibility, as it did in this case.

DUODENAL DIVERTICULA

I wish particularly to call attention to the question of duodenal diverticula. Although for many years diverticulum of the esophagus and the bladder, and Meckel's diverticulum have been recognized and dealt with surgically, duodenal diverticulum, an equally distressing condition, occurring more commonly, has been relatively overlooked all these years as a surgical entity.

Prior to 1912, not more than 100 cases had been reported, and these were discovered at operation or necropsy. Case,[1] of Battle Creek, was the first to diagnose the condition roentgenologically, and in 1913 he reported four cases. In 1920, he could find only eighty-five cases so diagnosed. MacLean,[2] an astute surgeon of Winnipeg, reported sixteen cases in 1923, of which four were dealt with surgically. The Mayo Clinic reported nineteen cases, discovered at operation or necropsy.

Up to the present, approximately 357 cases have been diagnosed roentgenologically, and sixty-six patients have been operated on. At the Lockwood clinic, fifty-one cases have been diagnosed roentgenologically and twenty-two of these have been dealt with surgically, and it is my firm conviction that at least thirty-eight patients should have been so treated and will yet return for surgical intervention. Various authors report the incidence of duodenal diverticula as 2.2 per cent of routine necropsies. We have found them in approximately 1.7 per cent of routine gastro-intestinal roentgenologic examinations.

Duodenal diverticula are probably of two types, congenital and acquired. The so-called congenital or developmental type occurs within 3 cm. of the ampulla of Vater, usually proximal to it, about the opening of the common bile duct and as such frequently involves the head of the pancreas. They possibly occur in Keith's weak points in the bowel or in the congenital buds of Lewis and Thyng. The mucous and submucous coats are involved. It is a question whether many so placed demand surgical treatment.

Fig. 1 (Mrs. H. V.).—Duodenal diverticulum of first part with partially loculated sac, associated with pain after eating. The patient was operated on and the sac found, freed and resected.

The acquired type has generally been supposed to be due to a "blow-out" from pressure within the bowel, of the contracting scar tissue about a healed ulcer. A hernia occurs with pouch formation. The pouches become globular in outline and on being followed roentgenologically they are seen to enlarge gradually.

* Read before the Section on Gastro-Enterology and Proctology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Case, J. T.: Diverticula of Small Intestine, Other Than Meckel's Diverticulum, J. A. M. A. **75**: 1463-1470 (Nov. 27) 1920.

2. MacLean, N. J.: Diverticulum of the Duodenum, with Report of a Case in Which the Diverticulum Was Imbedded in the Head of the Pancreas, and a Method for Its Removal, Surg., Gynec. & Obst. **37**: 6-13 (July) 1923.

All the coats of the bowel are involved so that only the mucous and serous coats remain intact, and ulceration and perforation have been found in them. Although it has been supposed that they develop from the border of a healed or healing duodenal ulcer, nearly three fifths have occurred in the second portion of the duodenum, and one fifth in the third portion, where ulcer is not commonly found. They must not be conflicted with the pouching that takes place with some penetrating duodenal ulcers. None of the latter are included in our cases. In addition, signs of an old scar at the ostium have not been found in any of our cases at operation. It is more probable that they occur about the blood vessels as they enter and leave the coats of the intestine. The great majority develop on the inner curvature of the bowel, just posterior to the reflection of the peritoneum. Two of our group have been found on the outer curvature of the second portion, and one directly anteriorly on the second part. On the third part they were found on the upper border and tend to fall down behind the intestine. All have been retroperitoneal except the one on the anterior aspect of the second part of the duodenum.

Fig. 2 (A. E.).—Duodenal diverticulum of the second part; nineteen years' history of abdominal trouble, including a gastro-enterostomy which failed to give relief. The patient was operated on and the diverticulum was dissected out and removed. Since operation she has been entirely free from trouble.

They vary in size from not more than 1 cm. in diameter to from 8 to 10 cm. in diameter. One has been reported which was found at necropsy, opening from the inner border of the second portion and hanging over the brim of the pelvis, that contained more than 1,000 cc. of fluid. Approximately three fifths were single and two fifths were multiple. They may have a small opening into the bowel with a long neck to the sac, or they may have a wide ostium that readily admits one or two fingers. In the first portion of the bowel a wide opening is more common, whereas in the second and third portions a narrow opening is found. They may occur at any age but are more common in patients past middle age.

SYMPTOMATOLOGY

A definite symptomatology is being developed for the condition. Patients complain of pain in the epigastrium directly over the diverticulum immediately after eating. The pain varies in type and intensity, depending on the site of the diverticulum, the size of it, whether or not ulceration, perforation or retention exists, and the nature of the foods ingested. The pain is frequently quite severe and is associated with a sense of fulness and distention locally, but without bloating, as seen in cholecystitis. Patients frequently complain of a bursting sensation about the area of the sac. Deep soreness usually is complained of and may be transmitted through to the back. Patients can usually place a finger directly over the site of the pain. When two diverticula are present they will invariably designate the two distinct sites of the pain. The history of pain and soreness extends over many years. There are no periods of well being as with duodenal ulcer. The "pain, food-ease" syndrome of duodenal ulcer does not exist. The pain may be relieved somewhat by the belching of gas and the taking of soda but is more completely relieved by vomiting, which is frequently induced. Patients dread food and avoid it, and are better when they have not eaten at all. As a result, the majority of patients have lost weight, become anemic, are generally debilitated, and develop that peculiar distressing mental outlook that characterizes patients who for a long time have not been able to eat the types of food they enjoy.

The pathognomonic symptoms are as follows:

1. A long history of epigastric distress without periods of well being.
2. Pain (*a*) always in the same position; (*b*) aggravated by food immediately after eating; (*c*) relieved only by vomiting, belching of gas, or the avoiding of food; (*d*) of a bursting type directly over the sac.
3. The finding of the diverticulum roentgenologically.

ROENTGENOLOGIC EXAMINATION

The symptoms point to the condition, but expert fluoroscopic examination must be relied on for actual diagnosis and localization of the sac. The duodenum should be thoroughly filled with barium throughout, and a careful search made for diverticula. When the sac is localized, its position and size and the exact site of the ostium should be determined. Plates should then be taken to confirm the diagnosis and for record purposes. Retention has been repeatedly demonstrated in the sac. Patients should be examined for retention at the end of twenty-four and forty-eight hours. Some roentgenologists have advised the filling of the duodenum through a duodenal tube passed well into the bowel. This procedure would be valuable for studying the diverticulum and has the advantage of permitting the duodenum to be filled without any barium in the stomach to obscure the field. It would be particularly useful in diverticula of the third portion of the bowel.

COMPLICATIONS

The condition is frequently associated with cholecystitis, duodenal ulcers and recurring appendicitis.

Ulceration, bleeding and perforation of the sac may occur. I have previously reported the perforation of a diverticulum on the outer curvature of the second portion into the gallbladder and colon while the patient was on a dietary regimen. The patient, a man, aged 63, was very ill for six weeks, but surgical intervention was ultimately successful.

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TREATMENT

In our experience the treatment should be surgical if distress persists in spite of adequate dietary control. Diet may benefit the condition somewhat but does not cure it. Frequently, patients are not relieved at all by a dietary regimen. Patients with retention in the sac

Fig. 3 (H. T.).—Duodenal diverticulum of the second and third parts. The patient, aged 78, with twenty years' history of "stomach trouble," had had extensive dietetic treatment, which failed. She insisted on operation. The diverticula were easily located and excised. She has had complete relief since.

rarely respond to medical care. Ulceration, bleeding and perforation have occurred while patients were on palliative treatment.

Surgical treatment consists in dissecting and freeing the sac; the neck of the sac is then crushed in a pair of curved forceps, and ligated, the sac is severed and the pedicle is oversewed and buried.

The roentgenologist should be present at the operation and be prepared to designate the exact location of the diverticulum. Blood vessels are distributed over the sac, materially facilitating recognition of the diverticulum at operation. If a sac in the first or second portion of the duodenum is not readily discovered at operation, a small incision should at once be made in the duodenum, a finger inserted, and the opening into the sac located from within the bowel. The finger is then passed into the ostium, which simplifies the freeing of the sac from its attachments. Great care must be taken in freeing the sac, as the wall is so thin. Thanks to the valuable suggestion of MacLean,[2] a diverticulum on the third portion of the duodenum can readily be exposed by elevating the transverse colon and mesocolon, and, by making a small opening at the reflection of the peritoneum posteriorly, one comes directly on the duodenum. In this position, the diverticulum comes off the upper posterior border of the bowel, retroperitoneally, and drops behind the duodenum. The sac should be exposed from above, dissected free, and then removed. While it was suggested that a drain should be left down to the third portion of the duodenum, I think it is unnecessary and should be avoided.

Occasionally if a duodenal ulcer is present and the sac is on the first portion of the duodenum, it may be advisable, if the sac is small, to rely on a gastro-enterostomy to relieve the distress rather than to extend the operation by dissecting out the sac as well.

Patients are immediately relieved of their complaint by surgical treatment. We have had no deaths, serious postoperative sequelae, or recurrences of the diverticula.

CONCLUSION

This interesting subject, which has been largely overlooked, is a definite pathologic entity, is distressing in a high percentage of cases, and responds somewhat to dietary treatment; but it frequently requires surgical measures for complete relief. It should be sought for in all routine gastro-intestinal roentgenologic examinations, and particularly in all patients with atypical distress of the upper part of the abdomen. It occurs particularly in patients past middle life; it is a progressive condition, and spontaneous cures do not occur.

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ABSTRACT OF DISCUSSION

DR. LEWIS GREGORY COLE, New York: I first observed this lesion in 1910 and described it as dilatation of the ampulla of Vater. Case set me right on this as being a diverticulum perivaterans. By 1921 Roberts and I had assembled thirty-seven cases, eliminated from this statistical study. These are now found so frequently that unless the stoma points up and the pouch contains barium for a long time they are not considered of clinical significance. The speaker maintains that this lesion causes the bursting sensation. My patients do not complain of a bursting sensation. So insignificant a lesion should not lead to so serious an operation with so high a mortality.

Fig. 4 (O'L.).—Duodenal diverticulum of the second part with ulcer of the first part; symptoms those from the ulcer; six hour retention in the sac. Operation was performed and gastro-enterostomy done. The sac was large and thin-walled and was invaginated and oversewed.

DR. FRED W. RANKIN, Rochester, Minn.: In the course of routine colon examination, that is, examination of colons of people who have symptoms referable to their intestine, one sees in 5 per cent of the cases a single diverticulum or multiple diverticula, and these are mostly in the sigmoid. In the left colon they are less frequent and in the cecum they are rare; in the small intestine they occur sporadically throughout its

entire length but in nothing like the number in the colon. I think that as one approaches the duodenum they probably occur more frequently than in the jejunum and the ileum and very rarely in the stomach, and quite rarely in the esophagus. I have followed the usual custom of dividing these sacculations into the congenital and the acquired variety. In the course of a routine examination at necropsy over a period of two years, Robertson found that the incidence of the so-called developmental or congenital variety of duodenal diverticula was a little over 2 per cent. In no case of the twenty-six diverticula discovered during this period of examination and reported by Nagle in 1924 was there any evidence of associated inflammatory lesion in the diverticulum. In a relatively large series of gastro-intestinal operations I have had only nineteen cases of diverticulum of the duodenum in which exploration has been done and I think I am correct in saying that all of these nineteen explorations were made for symptoms which I believe to be due to other organic lesions rather than the diverticulum. In this group of nineteen cases, fourteen were associated with duodenal ulcer which I assumed was the cause of the lesion; three of them were associated with cholecystitis with stones, and in the remaining case there was a fistula formation between the gallbladder and the duodenum. This acquired variety I think is almost invariably due to scar tissue formation, scar tissue contraction. It always occurs on the inner border of the duodenum, and the pull from the contraction of the duodenal ulcer, which in most instances is situated on the opposite border, is sufficient to produce the pouching as it is found. Pathologically these acquired diverticula of the duodenum always contain the four coats of the bowel in contradistinction to the congenital type, which runs true to form throughout the entire gastro-intestinal tract and is a hernia of the mucosa and submucosa through the musculature of the bowel wall. It is a good rule to follow, in a diverticulum anywhere in the gastro-intestinal tract, that surgery should be advocated for the extirpation or relief of symptoms only in the presence of complications. I have long since given up extirpations of the large intestine for those not producing symptoms, and my own experience with the diverticula of the stomach is limited to one case. I have not operated on a duodenal diverticulum for symptomatology except in the presence of a duodenal ulcer.

DR. AMBROSE L. LOCKWOOD, Toronto: In the twenty-two cases in which operation has been performed in this group, in only two was there sufficient gallbladder disturbance to justify removal. One patient had stones and the other did not. Of the whole group only three had duodenal ulcers, with no complications whatever. I have been for twenty years greatly interested in gastro-enterological problems. As surgeons and physicians we do not have to live with patients from the roentgenologic point of view but have to treat them daily and keep them free of distress. The shortest interval these patients were on a diet was four months. Some were on a diet for fifteen months. I should be interested to know how many patients Dr. Cole has found with duodenal diverticula whom he has followed and been responsible for treating and keeping free of distress. The multiple diverticula such as he has shown I purposely did not discuss, nor do I think any surgeon of repute today would attempt to deal with such a case. Possibly one, or two diverticula at the outside limit, should be dealt with surgically. In one patient at autopsy nine different diverticula were found in the second and third parts of the duodenum. I also made the statement that I believe thirty-eight of the total should have been dealt with surgically and these patients I hear of or see frequently. They still have their distress but I think that most of them will eventually be operated on. May I point out that of that sixteen, five had previous gallbladder operations, three gastro-enterostomies, and all but four had the appendix removed but still have the distress in the one point. I make no apology whatever for these twenty-two cases in which I have operated. I am only sorry I could not induce the other sixteen patients to have the operation. I am keeping in close contact with them and hope ultimately to be able to persuade them. I should like to point out that the roentgenologist, whom I always have present at the operation for such conditions, is present to designate the site of the diverticulum only, but not as a surgical assistant. He is there to advise about the condition, which I believe is good practice.

POUCHES OF THE PHARYNX AND ESOPHAGUS *

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BOSTON

My object in this paper is to review the literature on diverticula of the pharynx and esophagus, to mention their probable mode of development, to call attention to the frequency of their occurrence, to discuss their diagnosis and differential diagnosis, and to add an additional twenty-three cases as studied in the Esophageal Clinic at the Massachusetts Eye and Ear Infirmary.

A diverticulum may be defined as a blind pouch that has developed from a viscus or normal canal and may consist of one or more layers of the part involved.

BRANCHIAL CLEFT ANOMALIES

Branchial cleft anomalies must be mentioned in this paper to complete all the pouch formations in the pharynx.

The only congenital diverticula in this region are those of branchial cleft origin. Only rarely do they cause obstruction and contain food. In one patient examined there were two lateral pharyngeal pouches and one posterior, the two lateral pouches probably being the remains of the third or fourth branchial clefts, which open at about the level of the pyriform sinuses. The opening of the second branchial cleft is usually just behind the tonsil and not uncommonly has an external fistula opening in front of the sternocleidomastoid muscle just above the clavicle. The most commonly recognized diverticula of this part are those occurring in the pharynx as the result of a protusion of the lower pharyngeal mucosa through the fibers of the inferior constrictor.

PHARYNGEAL DIVERTICULA

The consideration of pharyngeal diverticula has been the subject of scores of papers in which hundreds of cases have been reported and on which the authors fairly well agree.

From an historical standpoint, the first case reported was by Ludlow,[1] a surgeon of Bristol, England, in 1764, 167 years ago. He referred to it as "a case of obstructed deglutition from a preternatural dilatation of, and bag, formed in the pharynx."

The next case was reported twenty-two years later by Granella.[2]

In 1878, 114 years later, Zenker and von Ziemssen[3] reported five cases and were able to collect twenty-three from the literature—all of these found at autopsy. Zenker applied the term "pulsion diverticulum" to this type, and it has since been referred to as a "Zenker diverticulum."

Etiology.—Several writers give the lodgment of a foreign body as the one most important cause of the formation of these pouches. In our cases it is interesting to note that none of the patients gave a history of having swallowed a foreign body.

Zenker was the first to classify these lesions of the pharynx and esophagus. He divided them according to their method of formation into pulsion diverticula, due

* Read before the Section on Gastro-Enterology and Proctology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Ludlow: Medical Observations and Inquiries, London **3**: 85, 1767.
2. Granella, Borsieri: Institute Med. Pract. IV De Dysphagia.
3. Zenker, F. A., and von Ziemssen, Hugo: Cyclopedia of the Practice of Medicine, New York, William Wood & Co. **8**: 1-214, 1878.

to pressure from within, and traction diverticula, due to a pull from without. In the pharynx one has to deal with the one produced by increased intrapharyngeal pressure. In the esophagus appear both the pressure and the traction varieties. Zenker's suggestions as to the etiology of these lesions stands unchallenged today.

There is an area on the lower posterior pharyngeal wall where the fibers of the inferior constrictor muscle run in parallel lines in a thin layer from side to side. Above this point they are oblique and heavier and are interlaced. Below they are thickened and act as a constrictor of the upper end of the esophagus. This place seems not only anatomically disposed to the formation of diverticula but also the location which is most exposed to the causes likely to produce them. The canal at this point is at its narrowest; anteriorly is the unyielding cricoid cartilage. Here great pressure is brought to bear by the bolus of food forced downward, and, because of the anatomic weakness, the mucous membrane may be pushed through the fibers of the inferior constrictor. Jackson [4] believes that there is an incoordination in the neuromuscular mechanism which results in a failure of the lower part of the constrictor to open when the bolus presents itself at this point.

Mosher [5] believes that there is an embryologic basis for the development of posterior pharyngeal pouches, pointing out the presence of a pouch in the early fetus, and calls to mind the fact that the pig has two pouches in this area. He also states that asymmetry of the thyroid cartilage, the pyriform sinuses and the mouth of the esophagus is a factor in the production of pouches.

Frequency.—Eighteen of our cases, or less than 2 per cent of 1,000 seeking relief from dysphagia, showed the presence of a Zenker pulsion diverticulum. The lesion is relatively uncommon, and less frequent than carcinoma, webs, fibrosis of the upper end of the esophagus, fibrosis of the lower end or "cardiospasm," cervical exostoses or paralysis of the muscles of deglutition.

Age.—The age of our patients varied from 40 to 83 years. The average age was 63 years, showing it to be a disease of later life. Lahey's [6] report of twenty-one cases with operation gives the average age of the patients as 67 years. This age incidence would seem sufficient to rule out any suggestion of congenital etiology.

Sex.—In our eighteen cases, fourteen were males and four females, a ratio which coincides with other reported series.

Symptoms.—The symptoms of a Zenker pulsion diverticulum depend on the size of the pouch. The patients under our observation gave a history of the duration of symptoms from six months to eight years, the average being three years, before they sought relief. There is no clinical picture which is absolutely characteristic of Zenker's pulsion diverticulum. The regurgitation of unchanged food is practically never absent but may occur with other lesions of the upper esophageal region. In the early stage, when the pouch is small there is a sensation as of a lump in the throat, which increases to a feeling of actual pressure as the sac enlarges. The presence of an excessive amount of saliva in the mouth and pharynx in the early stages has been mentioned by Jewett and Lichty [7] but has not been especially marked in our series of pouch cases, any more than was noticed with other lesions of the pharynx.

As the pouch enlarges, its opening becomes continuous with the lower pharynx. At the same time the opening of the esophagus becomes a mere slit on the anterior wall of the pouch, resulting in extreme dysphagia with the regurgitation of practically all food swallowed and an increasing sensation of pressure and suffocation. There may be gurgling noises in the throat, due to the mingling of swallowed air and food collected in the sac. A palpable swelling in the throat, more often on the left side, may sometimes be found after the sac has become quite large. A large diverticulum often presses on the laryngeal and pneumogastric nerve and causes hoarseness. A sense of suffocation and various cardiac symptoms are apt to occur as the sac enlarges into the thorax and presses on the vagus nerve.

Fig. 1.—A large posterior pharyngeal pouch that has become intrathoracic, and two lateral pharyngeal pouches that are probably of branchial cleft origin.

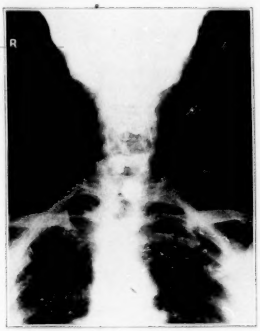

Fig. 2.—Asymmetry of the pyriform sinuses. The one on the right does not fill; possibly an etiologic factor in the production of a pulsion pouch.

Fig. 3.—The symptoms produced by a pharyngeal pouch depend on its size, the small ones producing the sensations of slight dysphagia, a large one complete obstruction.

4. Jackson, Chevalier: Bronchoscopy and Esophagoscopy, Philadelphia, W. B. Saunders Company, 1927, p. 355.
5. Mosher, H. P.: Asymmetry of the Mouth of the Esophagus and Retropharyngeal Diverticulum, Laryngoscope **34**: 854 (Nov.) 1924.
6. Lahey, F. H.: Surg., Gynec. & Obst. **51**: 227-236 (Aug.) 1930.
7. Jewett, C. H., and Lichty, J. A.: Diverticula of the Esophagus, Tr. Am. Gastro-Intestinal A. **28**: 251-257, 1926.

Differential Diagnosis.—The differential diagnosis is important because of the other lesions in the esophagus occurring at this age, giving the identical symptoms. The average age for carcinoma in this region was 65 years. The symptoms are often very similar to those of diverticulum except, perhaps, that there is more emphasis on pain in the carcinomatous lesions than in the other conditions.

There are several nonmalignant lesions occurring in this region which may present very similar symptoms. Fibrosis of the upper end of the esophagus may cause varying degrees of stenosis. This degeneration is the result of transference of infection to the esophageal wall from pathologic changes in the cervical glands or adjacent structures in the neck. Mosher [8] has proved fibrosis of the lower end of the esophagus to be due to spreading of infection from extra-esophageal pathologic changes.

Webs of the mucous membrane, due to areas of ulceration, superficial infection or trauma, may produce a conflicting combination of symptoms suggestive of diverticulum. Not infrequently these webs are associated with spurs [9] arising from the inferior and superior border of the anterior aspect of the cervical vertebrae. These spurs push forward the pharyngeal or esophageal wall and produce marked dysphagia.

Fig. 4.—The majority of esophageal pouches are of traction variety and are usually located on the anterior surface of the middle third and are caused by contraction of a healing peritracheal gland.

"Cardiospasm" may produce the same symptoms, even though the site of the pathologic condition is so much lower in the tract.

Partial paralysis of the lower pharyngeal muscles due to cerebral lesions or anterior poliomyelitis may produce the same symptoms that occur with a pouch. However, the sudden onset is of considerable value in differentiating the two lesions. Any one of the symptoms found with the pouch may be the first one complained of with paralysis. The same symptoms again may be produced by pressure from extrinsic causes, such as tumors arising from structures in the neck. These may present a confusing picture and a different clinical diagnosis.

Roentgen Diagnosis.—The one reliable means of correctly diagnosing diverticula is roentgen examination with barium paste. This at once establishes the presence and size of the sac and the degree of obstruction.

The sharply circumscribed lower border and spilling over of barium from the upper level of the sac are absolutely characteristic and need not be confused with any of the other causes of dysphagia.

Hurst [10] reports an anterior pharyngeal pouch in a woman, aged 57, which showed on direct examination as a small slit immediately behind the arytenoid cartilage and in front of the esophagus, three-fourths inch in depth. Here the larynx prevents the pouch from enlarging anteriorly, causing it to obstruct the mouth of the esophagus when it fills. Occasionally, the pyriform sinuses are very deep and repeatedly catch and hold particles of food. This condition is quite frequently seen in roentgen examinations of the esophagus.

Moore [11] calls attention to artificially produced pouches in the depths of the pyriform sinuses, used by criminals for concealing coins.

Treatment.—There is no treatment of any value except surgical removal. Several operative procedures for the relief of Zenker's pulsion diverticulum have been described at different times.

The first recorded surgical operation was by Nicholadoni [12] in 1877. His procedure consisted of opening the sac and establishing a fistula. In 1884, Niehans [13] performed the first one-stage operation for complete removal of the sac. This patient died from hemorrhage on the twenty-fourth day. Wheeler [14] in 1886 performed the first successful operation for the removal of a pharyngeal diverticulum. Dugge [15] in 1893 found only twelve reported cases in the literature of successful removal. Since that time an increasing number of operative cases have been reported.

Gerard [16] in 1896 reported two cases in which operation had been successfully performed by invaginating the sac and suturing the esophageal walls. The sac was then allowed to atrophy or slough off. This same method was used by Waggett and Davis [17] in 1912, but ten months after the operation the sac recurred. This method was abandoned.

Bevan,[18] in 1917, reported a cure by a modification of Gerard's method, but the limitations of this operation have discouraged its use.

In 1910, Stetten [19] collected from the literature a total of forty-eight cases in which operation was performed by the direct excision method, with 18.7 per cent mortality, death in a majority of cases being due to mediastinitis.

In 1907, Goldmann [20] did the first two-stage operation in an attempt to eliminate the dangers of mediastinal infection. The first stage consisted of freeing the pouch from its bed, through an incision along the anterior border of the sternocleidomastoid muscle. The fundus of the pouch was attached to the upper border of the incision—the neck lightly constricted by a suture. After the mediastinal lymphatics were sealed off, about the tenth day, the second stage was done. The sac was excised at its neck and the opening suitably closed. Later, in 1909, he modified this method by tightening the suture about the neck in the first stage, causing the pouch to slough off. This invariably resulted in a fistula which remained open for weeks.

Hill,[21] in 1917, described his operation of "diverticulopexy," which was essentially the first stage of the Goldmann operation. The pouch was left with its

8. Mosher, H. P.: J. Laryng. & Otol. **45**: 161 (March) 1930.
9. Mosher, H. P.: Study of the Movements of the Tongue, Laryngoscope **37**: 235 (April) 1927.
10. Hurst, A. F., and Briggs, P. J.: Guy's Hosp. Rep. **75**: 367 (July) 1925.
11. Moore, Irwin: Brit. M. J. **2**: 1169 (Dec. 18) 1926.
12. Nicholadoni, Carl: Wien. med. Wchnschr. **27**: 605, 1877.
13. Niehans, quoted by Girard: Cong. franç. de chir. **10**: 392, 1896.
14. Wheeler, W. I.: Pharyngocele and Dilatation of the Pharynx, Dublin J. M. Sc., series 3, **82**: 349 (number 179) 1886.
15. Dugge, Carl: Ein Fall von Esophagus Divertickel, München. med. Wchnschr., 1893, number 40, p. 529.
16. Gerard: Association française des chururgiens **10**: 392, 1896.
17. Waggett, E. B., and Davis, E. D.: A Case of Pulsion Diverticulum, Lancet **1**: 786, 1912.
18. Bevan, A. D.: S. Clin. North America **1**: 449-457 (June) 1917.
19. Stetten, DeWitt: Ann. Surg. **51**: 800, 1910.
20. Goldmann, E. E.: Die zweideutige Operation von Pulsionsdivertikeln der Speiseröhre, Beitr. z. klin. Chir. **61**: 741, 1909.
21. Hill, William: Pharyngeal Pouch Treatment by Diverticulopexy, Proc. Roy. Soc. Med. (Sec. Laryngol.) **11**: 60, 1918.

fundus at a higher level than its neck and a suture lightly tied about its neck to prevent the entrance of food. He states that, in small and very large pouches, it would be well to include the second stage of the Goldmann operation.

Mosher [22] reported several cases in which he slit the common wall between the diverticulum and the esophagus, operating through the esophagoscope. He has since given up this method in favor of the two-stage operation.

Imperatori [23] reported three cases in which he inverted the sac endoscopically and encircled it with a ligature. At the end of five or seven days the sac was removed by gentle traction. No infection followed the procedure. The size of the sac, as in the Gerard operation, limits the use of this method. Imperatori has since given up this method as unsafe.

Fig. 5.—This calcified gland was not adherent to a fixed structure and in healing did not produce a pouch.

Today, the two-stage operation of Goldmann is accepted as the operation of choice. It has undergone various modifications and refinements, such as Murphy's [24] operation, which omits the ligation at the neck.

Judd,[25] in 1918, sutured the neck of the sac to the skin, waited two weeks and excised the diverticulum. Following this he invaginated the stump into the esophagus. No anesthesia was used for the second stage.

Jackson [4] makes use of the esophagoscope to aid the surgeon in locating the sac. Lahey,[6] in 1930, reported twenty-one cases in which operation was performed by the two-stage method, with no mortality.

The successful removal of these pouches requires very nice judgment, familiarity with the structures encountered and painstaking perfection of the technic employed.

ESOPHAGEAL POUCHES

Esophageal pouches are entirely different from and should not be confused with those of the pharynx. According to autopsy records, esophageal pouches are more common than those of pharyngeal origin.

Zenker,[2] in 1877, was able to collect sixty cases of esophageal origin and only twenty-three of the pharyngeal type. Carman [26] found fourteen clinical cases reported between 1892 and 1919.

Pouches of the upper and middle third of the esophagus are not commonly diagnosed clinically, because they rarely produce symptoms of dysphagia. On the contrary, pouches in the lower third of the esophagus usually do produce symptoms.

In our series of esophageal diverticula, we found one in the upper third, four in the middle third and none in the lower third of the esophagus. The occurrence was 0.5 per cent of the causes of dysphagia.

These esophageal diverticula differ from the pharyngeal type in that they are evenly divided between the sexes and may occur at any age.

Rokitansky,[27] in 1840, is given the credit for first recognizing and describing the mode of formation of one type of esophageal diverticulum, to which he gave the name "traction diverticulum," in contradistinction to the pulsion diverticulum of the pharynx.

Traction diverticula owe their origin to the attachment to the esophagus of infected mediastinal glands or adhesions from infection of any of the surrounding esophageal structures, which contract on healing and exert a pull on that part of the esophagus to which they are attached.

Diseases of the tracheobronchial glands, especially those at the bifurcation of the trachea, make the anterior middle third of the esophagus the most common site for formation of these diverticula. They are usually cone shaped, with their base at their esophageal origin and the apex often at a higher level. Food does not accumulate with the diverticulum so formed; hence the infrequency of symptoms. Their walls may be composed of all the layers of the esophagus, or, if the muscle layer has been ulcerated through, it may consist only of the mucous membrane. A traction diverticulum may rupture into the bronchus or lung, as reported by Hawes.[28] Zenker considers this form very dangerous and apt to cause death by perforation into the trachea, bronchi, pleurae or great vessels.

Le Count [29] reports three cases of pouches found at autopsy occurring on the anterior esophageal wall between the aorta and the left bronchus, where the esophagus is not in contact with relatively firm structures like the aorta, bronchi or vertebrae. In these cases lymph glands were not found attached to the esophagus; the pouches were probably due to pressure from within.

In the same location another type of pouch is mentioned by Hill [30] and was first described by Lugard, who says that it is probably formed by the pouching of the left lateral wall of the esophagus over a connective tissue ligament running from the left bronchus to the dorsal vertebra. It is enlarged by the entrance and consequent accumulation of food into that part of the esophagus prolapsed over the ligament.

Fig. 6.—Multiple diverticula are uncommon and are usually the result of perforation of the esophagus by caustics.

Another group of pouches are those that occur in the lower third of the esophagus, the so-called epiphrenic or traction pulsion pouches, a name suggested in 1882 by Oekonomides.[31]

22. Mosher, H. P.: Webs and Pouches of the Esophagus, Surg., Gynec. & Obst. **25**: 175 (Aug.) 1917.
23. Imperatori, C. J.: Endoscopic Treatment of Pulsion Diverticulum of the Esophagus, Tr. Am. Bronchoscopic Soc., 1927, p. 70.
24. Murphy, J. B.: S. Clin. Chicago **5**: 391, 1916.
25. Judd, E. S.: Collected Papers of the Mayo Clinic, 1918, p. 15.
26. Carman, R. D.: Roentgen Diagnosis of Diseases of the Alimentary Canal, Philadelphia, W. B. Saunders Company, 1920, p. 65.
27. Rokitansky: Oesterr. med. Jahrb. **21**: 230, 1840.
28. Hawes, J. B., Jr.: Broncho-Esophageal Fistula and Traction Diverticulum, Am. J. M. Sc. **161**: 791 (June) 1921.
29. Le Count, E. R.: Diverticulum in the Cavum Broncho Aorticum, Chicago Pathological Society, 1915-1916, pp. 35-37.
30. Hill, William: Pharyngeal and Esophageal Diverticulum, Brit. M. J. **2**: 1163 (Dec. 18) 1926.
31. Oekonomides, G.: Ueber chronische Bronchialdrusen-affectionen und ihre Folgen, Basle, F. Rhiem, 1882, p. 71.

In a number of cases reported at autopsy, no evidence of the original traction agent could be found. This leads some observers to consider this type a pulsion type due to some defect in the esophageal musculature. They are sometimes found in cases of "cardiospasm." Vinson [32] considers congenital weakness of the esophageal wall a most important factor. Food lodging in these lower esophageal pouches may dilate them to a considerable size.

Barsony [33] reported two cases of duodenal ulcer in which, during fluoroscopic examination, in a certain phase of the esophageal function, diverticula appeared during the contraction. These, however, could not be observed in another phase. He called them functional esophageal diverticula due to a reflex relaxation from the duodenal ulcers.

Symptoms.—Esophageal pouches rarely produce symptoms and are found incidentally during life while searching for other pathologic changes. Carman [26] found fourteen clinical cases between 1892 and 1919, and added one from the Mayo Clinic. Smith,[34] in 1928, collected twenty-six cases more and added nine of his own, three of which were multiple. Only three of his own cases produced symptoms. The other six were diagnosed as a result of a careful routine esophageal examination in all gastro-intestinal examinations.

Portis [35] reported a diverticulum of the lower third in which symptoms of cardiac embarrassment were very marked and relieved only when the pouch was emptied by a stomach tube. Three of our patients complained of substernal distress and pain, sensation of obstruction in swallowing, but no emaciation or regurgitation of food, so frequently associated with the pharyngeal pouches.

Diagnosis.—Roentgen examination is the only means of differentiating between these and other esophageal lesions; the projection of barium beyond the normal lumen of the esophagus establishes the diagnosis. Great care must be taken to examine the patient in both planes.

Reitzenstein,[36] in 1898, was the first to discover this lesion by the use of bismuth emulsion and the roentgen ray. This was only one of eight clinical means he had for establishing a diagnosis.

Irrigation of the diverticulum affords relief when there is embarrassment due to filling of the large pouch. Feeding through a stomach tube may be necessary. Gastrostomy is sometimes resorted to.

Surgery of the esophagus is extremely difficult. According to Saint,[37] the chief reason for the late inception of surgery of the esophagus, its relatively slow progress and lack of attendant success can be summarized as follows:

1. The inaccessibility of the viscus. This applies particularly to the thoracic portion when its surgical approach is intimately bound up with previously developed operative procedures on the pleural cavity.

2. The absence of a serous coat in its cervical and thoracic parts.

3. A poor blood supply, interference with which often results in necrosis, tearing of sutures and extravasation of infective mucous secretion.

4. The danger of postoperative infection, cervical cellulitis, mediastinitis, pleurisy and empyema.

5. The probable danger of great shock resulting from interference with the vagi.

6. The presence of the diaphragm.

Relatively Small Percentage of Pouches as Compared with Other Diseases of the Esophagus and Pharynx

Condition	Per Cent
Carcinoma	45
Fibrosis of muscle (upper end)	16
Webs	13
"Cardiospasm"	10
Burns	6
Extrinsic causes	4
Paralysis	4
Pharyngeal pouch	2
Esophageal pouch	1

CONCLUSIONS

1. A careful examination of 1,000 cases of dysphagia showed pharyngeal pouches to be the cause of about 2 per cent and esophageal pouches less than 1 per cent.

2. Symptoms, which are not always characteristic, vary with the size.

3. A roentgen examination is the only means of differentiating between pharyngeal pouches and other lesions of the upper end of the esophagus.

4. Esophageal pouches are very commonly found at autopsy.

5. Surgical removal of pharyngeal pouches by the two-stage operation has proved to be the safest and most satisfactory procedure.

6. Surgical treatment of esophageal pouches presents the same difficulties encountered in all esophageal surgery.

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ABSTRACT OF DISCUSSION

LOUIS H. CLERF, Philadelphia: Physicians are prone to consider the common form of pulsion diverticulum as originating at the upper end of the esophagus, knowing full well that the esophagus is not involved and that the opening of the pouch or diverticulum is promixal to the horizontal fibers or the cricopharyngeal portion of the inferior pharyngeal constrictor. There are no characteristic symptoms which can be considered as being absolutely diagnostic. Boyce's sign and a visualization of this sign described by me in Osler and McCrae's Modern Medicine have been demonstrated in cases of carcinoma of the cervical esophagus. In my experience the roentgen studies have not proved infallible. Three cases can be recalled in which a diagnosis of diverticulum was made by competent roentgenologists whereas the esophagoscopic diagnosis was cancer; in a fourth case the roentgen diagnosis of cancer was changed after esophagoscopy to diverticulum. Esophagoscopy certainly should be considered as a diagnostic procedure, particularly if there is a question in diagnosis. I agree with Dr. MacMillan that the only treatment worthy of consideration is surgical removal. At the Jefferson Medical College Hospital we have been employing a one stage closed operation for the past five or six years with excellent results in a large series of cases. Traction diverticula by reason of their large openings and the absence of a dependent pouch rarely produce symptoms and are commonly discovered during a routine functional esophageal study. I have observed three cases that produced moderate symptoms. One of these was located slightly above the hiatal level. The slight disturbance in swallowing referable to the epigastrium promptly cleared up following esophagoscopy. In the remaining two cases, posture seemed to aid.

DR. FRANK H. LAHEY, Boston: In speaking of this condition, one should, I think, always qualify his experience with numbers and mortality. When one speaks of how to treat such a condition as this, one ought to say how many operations he

32. Vinson, P. P.: Cardiospasm Associated with Esophageal Diverticulum, New York M. J. **117**: 540 (May 2) 1923.
33. Barsony, Theodor: Functional Esophageal Diverticula, Wien. klin. Wchnschr. **39**: 1363-1364 (Nov. 18) 1926.
34. Smith, L. A.: Diverticula of the Thoracic Esophagus, Am. J. Roentgenol. **19**: 27 (Jan.) 1928.
35. Portis, M. M.: Esophageal Diverticulum, M. Clin. North America **5**: 53 (July) 1921.
36. Reitzenstein, Albert: Zur Kentniss und Diagnose der trefen Oesophagus-divertikel, München. med. Wchnschr. **45**: 354-359, 1899.
37. Saint, J. H.: Surgery of Esophagus, Arch. Surg. **19**: 52-128 (July) 1929.

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has done by his method, how many patients have died and how many are well. That is basic. First of all, I have operated on thirty-one esophageal pulsion diverticula and none of the patients have died. I state this because I should like to do the one stage operation, but if one patient in a hundred died under the one stage plan of procedure, I should still feel justified in doing the two stage operation. It takes a little longer but it is an operation safe in principle and, therefore, I shall adhere to it up to the time that a considerable number of one stage operations have been done without mortality. There are three stages in pulsion esophageal diverticula, that with the simple projection, that with a definite sac and that with a long bulging sac in the mediastinum. In the first stage, that of bulging, there is merely a feeling of a foreign body sticking in the throat. In the second stage, that is the formation of a small sac, there is only regurgitation of food and mucus. In the third stage there is regurgitation of food and mucus and obstruction. I have learned from experience with these two stage operations that if one wishes to prevent complications during the first and second stages there must be complete dissection of the neck of the sac. The apex of the sac must be implanted in the wound higher than the neck of the sac, and in this way food does not pass into the sac, and the sac does not become dilated between the first and second stages. Furthermore, with high implantation following removal of the sac, at the second stage, there is little or no drainage and the wound closes usually at the end of from ten to twelve days. One should recall that, following the removal of the sac of an esophageal diverticulum, the factors which originally produced the condition are still present and it is necessary for some time afterward to do dilation of the esophagus with bougies. Because of the irregularity of the esophagus as the result of the operative scar, it is wise to ask these patients to swallow a string as a guide to the bougie that is to be passed.

BENIGN TUMORS OF THE STOMACH

WITH REPORT OF CASES *

BRUCE C. LOCKWOOD, M.D.
DETROIT

Because of their relatively rare incidence, varied morphology, pathology, symptomatology, and roentgen evidence, benign gastric tumors give rise to great clinical interest. That they are more frequent than is generally considered is evidenced by a comparison of the number of benign with the number of malignant gastric tumors examined in the pathologic laboratory which were either removed at operation or discovered at autopsy.

At Harper Hospital during the past seven years there have been 12 benign gastric tumors examined in the pathologic laboratory, during which period there have been 266 cases of malignant gastric tumors in the hospital, an incidence of about 4.5 per cent. Hillstrom [1] found that in the department of pathology of the University of Minnesota, about 5 per cent of all the tumors discovered at autopsy or removed at operation were benign. There have been nearly a thousand cases reported.

Pathologically, the benign tumors which have been reported include fibromas, fibromyomas, myomas, adenomas, angiomas, lipomas, myxomas and cysts.

Morphologically, these benign tumors may vary in size from that of a pea to that of a grapefruit, but the majority have been less than 2 or 3 cm. in diameter. They may be single or multiple; the single growths predominate in case reports, but the fibromas and adenomas are more often multiple. Their site of preference has been the middle third of the stomach, but they are reported as occurring anywhere in the tract from the region of the lower esophagus to the duodenum. They may be entirely intramural, project into the lumen of the stomach in sessile or pedunculated form, or, less frequently, project outside the stomach on a pedicle.

Polypoid growths inside the stomach, frequently mentioned as mucous polyps or gastric polyps, are more often adenomas, although they may occur with other histologic patterns or be mixed tumors of connective tissue and glandular origin. When these small growths occur in large numbers, the condition is known as gastric or multiple polyposis. Numerous cases have been reported, although the condition is extremely rare. In Balfour's [2] experience it was found only once in 69,000 abdominal operations. When these single polypoid growths are large enough and occur near the pylorus, they are described as ball valve tumors.

Fig. 1 (case 1).—Section of nonmalignant neuroblastoma removed from posterior wall of the stomach.

Eusterman and Senty [3] found twenty-seven benign gastric tumors occurring at the Mayo Clinic between the years 1907 and 1921: ten myomas, five fibromas, four angiomas, two dermoid cysts, one gastric polyposis, two adenomas and three polyps.

Eliason and Wright,[4] in 1925, reported fifty cases found at operation or autopsy: sixteen papillomas, sixteen polyps, six fibromas, five adenomas, four myomas, one cyst and one lipoma. Moore,[5] in 1924, reported twenty-three cases diagnosed roentgenologically and proved at operation. In 1927 he [6] reported eighteen additional cases observed during the intervening three years. Holmes,[7] in 1927, had seen seven proved cases occurring in about 30,000 examinations

* From the Department of Internal Medicine, Harper Hospital.
* Read before the Section on Gastro-Enterology and Proctology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Hillstrom, quoted by Rigler (footnote 9).
2. Balfour, D. C.: Surg., Gynec. & Obst. **28:** 465 (May) 1919.
3. Eusterman, G. B., and Senty, E. G.: Surg., Gynec. & Obst. **34:** 5 (Jan.) 1922.
4. Eliason, E. L., and Wright, V. W. M.: Surg., Gynec. & Obst. **41:** 461 (Oct.) 1925.
5. Moore, A. B.: Am. J. Roentgenol. **11:** 61 (Jan.) 1924.
6. Moore, A. B.: Benign Tumors of the Stomach from the Roentgenologic Point of View, J. A. M. A. **89:** 368 (July 30) 1927.
7. Holmes, G. W., in discussion of Moore (footnote 6).

during the previous fifteen years. Mason and Dwyer [8] found only three cases of benign tumors in 4,000 roentgenologic and clinical examinations. Rigler [9] found eleven cases of benign growth to seventy-four cases of carcinoma in an unstated number of gastrointestinal examinations during a two year period. A more complete discussion of the literature has been given by the authors mentioned.

Fig. 2 (case 2).—Fibroid masses removed from lesser omentum.

In this series of twelve cases there were five fibromas, three adenomas, two pancreatic rests, one polyp and one neuroblastoma. The literature does not reveal a gastric neuroblastoma previously reported.

SYMPTOMS AND LABORATORY OBSERVATIONS

The symptoms are determined by the size, nature and position of the growth. The smaller growths may exist symptomless, provided they are not ulcerated and are not near the sphincter; such tumors have been discovered at autopsy.

Larger tumors, intramural or pedunculated, have usually produced enough disturbance of gastric function from pressure or traction to cause variable, intermittent, long standing symptoms of indigestion, such as distress or pain after meals, heartburn and nausea, not characteristic of any one specific condition. Tumors, sessile or pedunculated, situated near the pylorus, may produce an intermittent ball valve pyloric obstruction, with attacks of severe pain, nausea, vomiting and often bleeding, probably due to torsion of the pedicle and strangulation. Complete pyloric obstruction may take place with gastric dilatation, food retention and visible peristalsis. These obstructions have usually been temporary, as the tumor often falls back into the stomach with relief of symptoms, until the next recurrence.

Intermittent bleeding has also often been seen from polyps situated away from the pylorus, probably because of their excessive vascularity, especially the angiomas. Superficial ulceration also may take place.

Malignant degeneration not infrequently occurs, especially in the adenomatous types, producing, together with a restricted diet, a gradual loss of weight and advancing anemia.

The laboratory observations are not characteristic. Achlorhydria is frequent, especially in the cases of hypertrophied gastric mucosa and polyposis. There is an increase in mucus, occasionally blood, and in a few cases a polypus has been caught in the eyelet of the tube, recovered, and examined microscopically. In other cases a hyperchlorhydria with variable degrees of delayed evacuation has been found, simulating pyloric ulcer. Secondary anemia is common.

Physical signs relate only to palpating the tumor mass, which depends on the size of the tumor and the thickness of the abdominal wall. This is more likely to be accomplished under fluoroscopic guidance.

ROENTGENOLOGIC EVIDENCE

Roentgenologic examination is by far the most valuable method in diagnosis. Of greatest importance in finding any of the smaller lesions of the stomach is the careful routine and unhurried fluoroscopic examination, with careful approximation of the stomach walls and determination of organ mobility by manual pressure. Observations should be made from different angles in both the upright and the prone positions, with the stomach containing only a few swallows of barium. Overfilling of the stomach may obliterate a view of the defect.

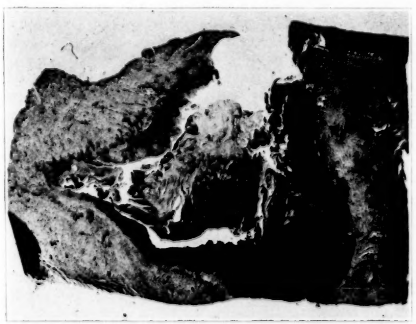

Fig. 3 (case 2).—Section of gastric myoma showing round cell infiltration, necrosis and ulceration.

The characteristic sign of a mural, sessile or internal pedunculated growth is the round or oval sharply contoured filling defect. Since most of these tumors arise from the mucosa or submucosa, they are central rather than marginal and can be shifted within the stomach in varying degrees by palpation. They appear as rounded translucences, much like a foreign body in the lumen of the stomach. As the gastric musculature usually remains unaffected, the peristalsis is uninterrupted and

8. Mason, J. T., and Dwyer, M. F.: Benign Tumors of the Stomach, J. A. M. A. **90**: 235 (Jan. 21) 1928.
9. Rigler, L. G.: Am. J. Surg. **8**: 144 (Jan.) 1930.

the wall remains pliant. Except in cases of multiple polyposis, the rugae have a normal appearance; they are not in star shaped, convergent folds as in ulcer or scar, and are not obliterated as in cancer. Absence of the spasm and diminution in the size of the stomach, usually seen in ulcer or cancer, are other characteristics of benign growths. A mass may or may not be felt.

Fig. 4 (case 3).—Marginal ulcer with polyp.

Multiple growths are strongly indicative of a benign character.

In gastric polyposis the numerous small rounded defects or translucences are described as giving a characteristic picture, resembling a sponge or finger marks.

A small growth in the antrum may give only a vague filling defect and a six hour residue, suggesting a pyloric ulcer or cancer. A polypoid growth prolapsing into the duodenum gives a central translucence which may be fairly diagnostic.

TREATMENT

Treatment, aside from the palliative, is entirely surgical, and should be carried out as soon as possible, on account of the not uncommon occurrence of malignant degeneration, especially of the adenomatous type of tumor. Friedenwald and Finney [10] and others have reported such cases. The end-results from surgical excision are reported as excellent.

In cases of multiple polyposis, gastric resection is indicated, provided the disease is causing enough trouble to warrant such operative risk.

REPORT OF CASES

The following case reports represent examples of the different morphologic types of tumor with their different manifestations:

CASE 1.—F. D., a white man, aged 42, who consulted me, July 8, 1929, had an irrelevant past history for a painless jaundice lasting two weeks in 1914. The present complaints began in 1927, since which time he had had periods, lasting from one to two months and occurring two or three times a year, of a burning epigastric pain, coming on from half an hour to three hours after meals and radiating upward under the sternum and at times to the right upper quadrant of the abdomen. The pain was relieved often by soda and by induced vomiting. He had had no nausea and had never vomited spontaneously. On four or five occasions he had had attacks of a more severe and diffuse epigastric pain coming on at about 3 a. m. and lasting from two to three hours, requiring morphine for relief. He had not had any hemorrhages. He had lost about 25 pounds (11 Kg.). The bowels were normal. Physical examination was negative except that there was moderate tenderness in the epigastrium and in the right upper abdominal region. Laboratory examination showed: urine, normal; blood count, normal except for slight secondary anemia; blood Kahn reaction, negative. Gastric analysis showed an achlorhydria. On fluoroscopic examination the chest was found to be normal. Ingestion of the barium meal showed the esophagus normal. The stomach was of the intermediate type with active two cycle peristalsis. With the stomach containing from 1 to 2 ounces of the barium, the rugae were found to be of normal size and direction. On the posterior wall in the middle third of the stomach was a slightly tender filling defect about 3 to 4 cm. in diameter, with a smooth border, easily palpated and movable about 2 or 3 cm. Further filling of the stomach with the opaque mixture obliterated a view of the tumor. The duodenum was normal, but there was considerable tenderness in the gallbladder region; normal motility was present at five hours. The remainder of the tract was normal.

Oral administration of the dye did not show any filling of the gallbladder at the fifteenth, eighteenth, or twenty-first hour. No stones were demonstrated.

A diagnosis of a nonmalignant intramural tumor of the posterior wall of the stomach, with probable gallbladder disease, was made.

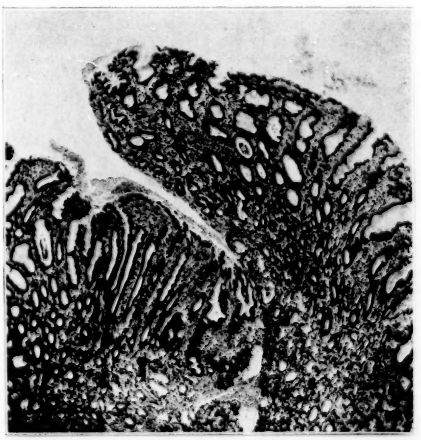

Fig. 5 (case 3).—Section of nonmalignant papillomatous polyp.

Subsequent observation during attacks of pain showed on one occasion much gallbladder tenderness and some spasm of the right upper abdomen. In other attacks this was not apparent. In Harper Hospital, preliminary to operation, the roentgen observations were confirmed by Drs. Evans and Reynolds, although in the meantime in another city roentgen studies were reported as entirely negative.

The patient was operated on, October 3, by Dr. Max Ballin. A round tumor of firm consistency, about 3 cm. in diameter, was excised from the posterior wall of the stomach. It arose in the

10. Friedenwald, J., and Finney, J. M. T.: Am. J. M. Sc. **154**: 683 (Nov.) 1917.

submucosa and was slightly sessile. A cholecystitis was also found, with two stones lodged in the cystic duct. A cholecystectomy was done. The pathologic condition of the tumor was reported by Dr. A. S. Warthin to be that of a nonmalignant neuroblastoma (fig. 1).

Case 2.—Mrs E. B., a white married woman, aged 50, who was referred in March, 1927, gave a past history which was irrelevant except that she had had a fibroid uterus removed in 1923. She had never been pregnant. The chief complaint was that intermittently during the past year she had been able to feel a lump in the upper portion of the abdomen. No pain and no gastric disturbance had been noted, but there had been some soreness in the lump during the spells when it was palpable. There was also some dyspnea and palpitation on exertion. The patient was well nourished. The pulse was 100 and the blood pressure was 190 systolic and 115 diastolic. A moderate cystadenoma of the thyroid was noted and the heart was moderately enlarged, with an occasional premature systole. In the epigastrium was palpated a smooth, hard, round, slightly tender mass about the size of a lemon, freely movable about 4 inches (10 cm.) in each direction, which could almost be made to disappear under the margin of the left ribs.

Laboratory examination showed that the urine was normal; achlorhydria was noted in a single test meal; the stool was normal; there was moderate secondary anemia; the Kahn reaction was negative. The basal metabolism was plus 11.

Roentgen examination showed the chest normal except for some cardiac hypertrophy. The esophagus was normal. The stomach was of the intermediate type, showing two cycle, uninterrupted peristalsis. There was no evidence of ulcer or growths. The palpable mass appeared to be outside the stomach, resting along the lesser curvature, and produced a broad shallow pressure defect. On manual movement of the mass upward, the stomach also seemed to be drawn upward but not to the extent that the mass could be moved. Manual movement of the stomach also seemed to move the mass. The stomach was empty at five hours, and the rest of the tract was normal. A diagnosis of a tumor or cyst of the lesser omentum or lesser peritoneal cavity was made and operation was advised. This, however, was postponed by the patient for two and one-half years, or until the tumor had grown to the size of a grapefruit and there were several attacks of rather severe pain. During this time I lost contact with the patient until the day of operation. She was operated on in October, 1929, by Dr. Angus McLean. A large round fibroid mass about 15 cm. in diameter was found adherent in the lesser omentum and attached to the lesser curvature of the stomach by a short broad pedicle (fig. 2). Attached to the side of the mass also by a short broad pedicle was another tumor of like consistency but about half as large. In the stomach at the site of the attachment of the tumor was a gastric ulcer. The tumor and ulcer were excised, and the patient has remained well.

Pathologic examination of the tumor by Dr. P. F. Morse showed that the specimen consisted of a vascular myoma of the gastric wall, with recent round cell infiltration, and a large area of necrosis, with ulceration (fig. 3).

Case 3.—T. F., a white man, aged 32, single, had had a gastro-enterostomy for duodenal ulcer in 1919, after which he remained well for one year. In 1920 there was a return of symptoms, and examination and operation disclosed a marked enlargement of the jejunum, due to an obstruction and adhesions distal to the stoma. Freeing of the adhesions and obstruction gave relief for another year. In 1922 a diagnosis of marginal ulcer was made and the patient was operated on again in 1923, when the gastro-entero-anastomosis was removed, a very large ulcer excised, the lower half of the stomach resected and a posterior Polya anastomosis performed. He remained well for three months, when there was a return of the symptoms, and roentgen examination by Drs. Evans and Reynolds disclosed a new marginal ulcer, with the probability of a polyp (fig. 4). In 1927 he was operated on again, and the ulcer was excised together with a polyp about 2 cm. long, originating at its edge.

Dr. P. F. Morse reported that the tumor consisted of redundant gastric mucosa with areas of buried glands, and infolding of a nonmalignant papillomatous polyp (fig. 5).

CONCLUSIONS

The relative incidence of benign to malignant growths in the stomach is about 1 to 20, as shown by the records from both operating and autopsy rooms.

The percentage of diagnosed cases of benign tumors would be increased by more frequent and more careful fluoroscopic study. The roentgen observations are reasonably characteristic. In order to demonstrate the smaller lesions, the stomach must contain only small quantities of the contrast mixture, the walls must be approximated by manual pressure, and the patient must be examined in both the upright and the prone position.

The symptoms are not typical; they vary with the site, size and character of the lesion, and may simulate other forms of indigestion.

Because of the tendency of these slowly growing benign tumors to become malignant, their recognition is important and their surgical removal indicated.

10 Witherell Street.

ABSTRACT OF DISCUSSION

Dr. George B. Eusterman, Rochester, Minn.: In Dr. Lockwood's opinion, the frequency of benign tumors of the stomach amounts to about 5 per cent. This is considerably higher than my incidence of 1.3 per cent, in a paper which I published in 1922. Undoubtedly the incidence is greater than in the statistics which I quoted, owing to the rapid accumulation of other convincing case reports in the literature in the last decade. Up to the present I have had some sixty-five surgically verified cases of my own. It is also quite likely that a certain percentage of lesions regarded as inoperable carcinomas of the stomach because of their high situation in the organ are benign. This has been proved by the fact that it was only on the insistence of the patients, demanding exploration in spite of the unfavorable site of the growth, that the true nature of the lesion was determined, it being benign and not malignant. From the standpoint of the pathology of these lesions I have nothing more to say, except that they are of a diverse nature, as emphasized by the author and by other writers, and that the only complication such tumors do not have that ulcers do is perforation, acute or chronic. They may all obstruct or bleed, or undergo carcinomatous transformation, and, in addition, may intussuscept. Some of the most dramatic and painful complications that I have seen were the result of intussusception of such tumors situated in or near the pylorus. The roentgenologic aspects of these lesions have been well summarized by the author and I might say that he has included practically all the criteria that Moore and his associates laid down several years ago and which have been confirmed by all other roentgenologists. From the symptomatic standpoint one must remember that these tumors are frequently symptomless, especially those that are small and do not involve the orifices. Some of these tumors are quite large, without producing symptoms, although evidence of anemia or hemorrhage may be present. Moreover, they do not involve the curvatures as ulcers and cancers do, but have a predisposition to the anterior and posterior walls. Apparently not all these tumors have characteristic roentgen changes. Formerly, the majority of benign tumors were considered to be carcinomatous, but nowadays they are often called benign when at operation they really turn out to be carcinomatous. Finally, I wish to stress the high incidence of anemia and the infrequency of pyloric obstruction and palpable mass. Some of these lesions are associated with an anemia of severe grade, indistinguishable from pernicious anemia, and usually with an absolute achlorhydria. These cases are being followed with interest since removal of the lesions. It is also important to exclude tumors, sometimes benign, of the upper digestive and intestinal tracts in all cases of unexplainable anemia, especially in the presence of gross or occult bleeding from the digestive tube.

Dr. Frank Smithies, Chicago: In your classification of benign tumors do you exclude gummas?

Dr. Eusterman: I exclude gummas. We consider them granulomas and not growths, in the strict sense.

DR. MAURICE FELDMAN, Baltimore: Diverticula of the duodenum are not an uncommon observation. The condition is reported with greater frequency because of better and more thorough roentgen studies made in the routine gastro-intestinal examination. The diagnosis of duodenal diverticula in most instances is accidental, the roentgen ray offering the only preoperative means of diagnosis. Not infrequently, however, the pouches may be overlooked or overshadowed and may remain unrecognized or at times even misinterpreted. I should like to emphasize the importance of the fluoroscopic method of examination as a method of choice in the detection of diverticula involving the duodenum and the importance of observing the duodenum with meticulous care, with the palpating hand. It is also necessary to take roentgenograms in various positions in order to recognize some diverticula. In my experience with diverticula, I find that manipulation and pressure over the duodenum in the roentgen study is an important procedure which cannot be too strongly stressed in the diagnosis.

DIVERTICULA AND DIVERTICULITIS *

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Diverticula may occur anywhere in the intestinal tract, and in many instances there is an embryologic excuse for their existence. They occur from the appendix to the anus but more frequently in the sigmoid than in any other part of the alimentary canal.

The bowel is developed from a diverticulum and from it, as diverticula, arise the liver and pancreas and the cecum with its degenerate end, the appendix. In regions where diverticula are a normal developmental necessity, sporadic secondary diverticula may occur. In other instances they may be merely structural imperfections of early fetal life, as in the case of the outgrowths of intestinal epithelium perforating the muscular coat, which occur about the third month and which may, later on, be responsible for diverticula (Lewis and Thyng).

Although this subject has been sporadically mentioned in the literature for some 230 years and the possibility of secondary pathologic trouble has been recognized, it is only within the last decade or two that it has received serious attention. Telling has said that "until a morbid condition is described in all the ordinary student textbooks of medicine and surgery it cannot be said to have obtained complete recognition." The truth of this is evident.

The disease was mentioned by Cruveilhier in 1849 and by Virchow in 1853, both commenting on its frequency. For the next decade or two there was quite a revival of interest in the subject, Rokitansky being responsible for the classification of diverticula into "true" and "false." In 1873, Mr. J. W. Hulke reported a case of diverticulum of the small intestine which had become adherent to the rectum and eventually opened into it. Sidney Jones and Mr. Hawkins in the same year reported cases of "false" diverticula of the sigmoid, ending in a vesicosigmoidal fistula. Pratt's case was an instance in which a loop of the small intestine had become adherent to the wall of the pelvic colon, resulting in intestinal obstruction.

However, in this period all credit must be given to Sir Charles Ball for his most exhaustive and enlightening description of the disease and all its possibilities for trouble. This article can be found in his textbook on "Diseases of the Rectum and Colon" published in 1887.

Strange as it may seem, in view of the active interest in this subject between the decades of 1870, 1880 and 1890, it seems to have escaped the notice of the general medical profession. The period of the renaissance may be dated from 1898, when Graser's paper appeared. This was followed by studies by Fischer, Beer and Moynihan, and an excellent contribution in 1907 by Mayo and Wilson. In 1908, Telling published a comprehensive review of the whole subject. From then on up to the present, many papers have appeared. Those chiefly of interest were by W. J. Mayo, McGrath, Lejars and Menetrier, Lockhart-Mummery, Judd, Masson, Spriggs and Marxer. To Case belongs the credit for having first suggested "diverticulosis" as a title for the noninflammatory mucosal herniations.

Almost all phases of the disease have been exhaustively studied, and some rare secondary and far-reaching complications have been mentioned, which should emphasize the necessity of always being on the qui vive for an early diagnosis, with the hope of avoiding these complications and fatalities.

Diverticula may be divided into complete, which involve all the coats of the intestine, and incomplete, which involve only the mucosa and peritoneum. I think that the classification of diverticula as true and false, suggested by Rokitansky, is much better than division into congenital and acquired, because to my mind the evidence, so far, in favor of the acquired theory is not convincing. All the causes so far assigned do not satisfactorily explain diverticulosis. I believe that diverticula, like hernias, have the same underlying cause; like cancer they occur at all ages but are most manifest after the age of 35; they occur more frequently in males than in females, are much more frequent than is at present appreciated, and are always associated with symptoms; but, as in hernia and a good many other diseases, the symptoms are not so obvious as to suggest their origin. In other words, there are so many other ways to account for the symptoms accompanying diverticulosis that they are usually assigned to some simpler pathologic condition.

All people with diverticulosis have symptoms, but the symptoms are overlooked and are considered as being due to dietary indiscretions and the like. There is always dull aching pain. The average practitioner unfamiliar with diverticulosis would not associate with that disease a dull aching pain accompanied by occasional attacks of diarrhea, alternating with constipation and gaseous distention. When these lesions occur on the right side, in the appendix, cecum or ascending colon, they are much more likely to receive serious attention and be discovered than if they are on the opposite side. This is obvious when one considers that most of the acute abdominal conditions are confined to the right abdominal cavity and that most of the developmental abnormalities are on the right side. Naturally, when a patient complains of pain or discomfort there, he stands a good chance of being roentgenographed and thoroughly overhauled, but not so when the lesion is on the other side. Yet, as a matter of fact, most of the acute cases of diverticulitis occur on the left side, particularly in that most variable portion of the alimentary canal, the sigmoid.

Diverticulitis may occur at any point where a diverticulum has formed, but the most frequent site is the sigmoid. The sigmoid is a loose, movable organ and may be up in the abdomen one moment and in the pelvis

* Read before the Section on Gastro-Enterology and Proctology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

the next. It is subject to twists and volvulus and variation in position. This seems to me the probable reason why inflammation occurs most often in the sigmoid. The sigmoid usually contains hard fecal matter, and its variations of position cause it to be more liable to injury than are any of the other parts of the colon.

The symptoms of diverticulitis vary with the pathologic condition. The pathology is practically the same as in appendicitis. If there is an acute condition, all the symptoms are present that one sees with acute appendicitis; viz., pain, rigidity, rise of temperature and vomiting. Mummery's suggestion to divide these cases, from a clinical standpoint, into those in which there is a tumor formation and those in which there is an acute abscess is excellent, because in the one instance one is dealing with an acute, active, surgical condition, while in the other the condition is a chronic one that does not require immediate active surgical intervention.

The sequence of events and complications of a diverticulitis depend on the pathologic process. There may be a thinning of the mucosa, with the passage of toxins into the bowel, local peritonitis and adhesions. The diverticulum may become strangulated and slough off into the peritoneal cavity. An abscess may form which can wall itself off or perforate, presenting the same symptoms as in the perforation of any abscess into the bowel or peritoneal cavity. There may be a hyperplastic inflammation as in tuberculosis, and this is the most frequent. Adhesions may form to any organ in the abdominal cavity, frequently to the bladder with perforation into the bladder. The symptoms arising from any of these complications depend on the nature and site of the pathologic process.

There is no medical treatment for diverticulosis any more than there is any medical treatment that will abort appendicitis. In my opinion, all people with diverticulosis would be better off with an appendicostomy; diverticulitis would be less likely to develop. When an acute pathologic process is present, the best procedure is to make a stoma cephalad to the site of pathologic change and always at a sufficient distance so as not to interfere with subsequent surgical intervention. When there is a fistulous opening into the bladder, it is better to allow the colostomy or stoma to remain open for a long time, in the hope that, if the current is sidetracked and the source of infection is eradicated, the opening into the bladder will close up. It is never safe to try to close the opening until all the inflammation has subsided. If it does not close of its own accord, an attempt may be made to close it afterward.

I have done five resections of the sigmoid for the hyperplastic type of diverticulitis. Four patients recovered, and the other died of peritonitis. If I had known as much then as I do now, I would not have attempted the resection until after the patient had been colostomized for some time.

The diagnosis of diverticulitis is sometimes a matter of great concern, for there are other conditions which closely simulate it. Because of the mobility of the lower sigmoid, the symptoms may be entirely right-sided and suggest appendicitis, a justifiable and quite natural error. If the diverticulum involved is located in other parts of the colon, a relatively infrequent occurrence, accurate diagnosis may be impossible. Occasionally, acute intestinal obstruction occurs, supervening on a chronic hyperplastic diverticulitis or kinking of the small intestine by adhesions.

In the realm of differential diagnosis I would mention carcinoma of the rectosigmoid, malignant vesicocolic fistula, gynecologic conditions in the pelvis, sigmoiditis, hyperplastic tuberculosis and syphilis.

Carcinoma of the rectosigmoid may be ruled out by careful sigmoidoscopic and roentgenologic investigation, but sometimes the diagnosis cannot be made until the specimen has been sectioned by the pathologist. In this connection it may be stated that a number of cases of carcinoma, secondary to diverticulitis, have been reported. I have had two cases. Malignant vesicocolic fistula may be ruled out by cystoscopic study. The absence of blood in the stools cannot be relied on in making a differential diagnosis, because I have seen a number of cases of diverticulitis not alone with blood in the stools but with severe hemorrhages. Theoretically, it should be easy to distinguish between diverticulosis and carcinoma of the sigmoid, as a diverticulosis has a much longer history, with frequent attacks of acute exacerbations and remissions, whereas in carcinoma there is practically no discomfort until the tumor is well established or until it involves the lumen of the bowel. There is apt to be much more blood and mucus in the stool of a patient suffering from carcinoma, but as a matter of fact many cases of carcinoma of the sigmoid closely resemble diverticulosis in that the entire wall of the bowel is apt to be involved. Theoretically, it should be confined to the mucosa before it is discoverable, but this is not always so.

Again, carcinoma of the sigmoid not infrequently becomes adherent to the side of the pelvis, and then a perisigmoiditis with abscess formation occurs. This will sometimes give the appearance of diverticulosis. On account of ulceration, carcinoma located just before the peritoneal reflection is not infrequently associated with abscess. I have more than once, in dissecting, opened up an abscess; and, as was to be expected, there was a history of fever and pain, together with bladder symptoms, previous to operation. The diagnosis in these cases, therefore, is not by any means as simple as one would suppose.

It has been suggested by some that loss of weight in carcinoma should serve as a distinguishing feature in comparison with diverticulosis, but as a matter of experience I have found very few cases of carcinoma, except in the advanced stages, in which there was loss of weight. In St. Bartholomew's Hospital there was one instance in which a woman with a very advanced carcinoma gained weight for many months, when she was in an inoperable condition. Therefore, loss of weight cannot be depended on to differentiate carcinoma from diverticulosis.

Pelvic conditions involving the general organs are not infrequently due to diverticulitis of the sigmoid, as shown by Poulain. Giffin describes pelvic tumors in four women suffering from diverticula without any coexisting bowel symptoms. Sigmoiditis occurs at an earlier age than diverticulitis, usually recedes spontaneously, and, pathologically, is apt to involve the mucosa. Hyperplastic tuberculosis almost invariably involves the cecum, and some tangible evidence of tuberculous infection is usually available. Syphilis should always be thought of and ruled out.

The usefulness of the x-rays in diagnosis has been occasionally limited by the physical impediments to the entrance of the barium mixture into the diverticular sac, but in the majority of instances roentgen examination is invaluable.

It is doubtful whether medical treatment can prevent diverticulitis. It seems to me that appendicostomy

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would prevent diverticulitis. The treatment of diverticulitis is obviously surgical.

REPORT OF CASES

CASE 1.—A woman, over 50, referred by Dr. Torrens in 1926, gave a history of occasional severe attacks of pain in the left lower quadrant, over a period of many years. Five days before I saw her she had severe colicky pains with constipation and fever, continuing for two or three days, when she began to vomit. She had been vomiting for two days previous to my seeing her. She was brought into the hospital with a distended and tympanitic abdomen, a rapid pulse and a temperature of about 101. She was immediately prepared and sent to the operating room, with a diagnosis of intestinal obstruction of some form. When the abdomen was opened by a left rectus incision, a long sigmoid, studded with diverticula, came into view. On further exploration it was found that the inflamed diverticulum had become adherent to a loop of small bowel, which was incarcerated in a femoral hernia. An ileostomy was performed, but the patient did not recover.

CASE 2.—T. S. R., a man, aged 59, tall, very thin and delicate looking, complained of long standing definite discomfort in the left iliac fossa. The bowels had always been regular. He had never passed blood or mucus. Two weeks previous to the examination he had had abdominal cramps, low down on the left side. Four days previous to examination he had such severe pain that he had to go to bed. The pain was so severe that he kept an ice bag over the lower left portion of the abdomen, over the sigmoid. The temperature was 100. The sigmoid loop with the inflamed diverticulum had prolapsed into the culdesac and was in close proximity to the bladder. There was danger of rupture of the diverticulum into the bladder, resulting in a fistula. Colostomy was advised but was not accepted.

CASE 3.—A patient who complained of a constant pain in the region of the appendix with tenderness over the cecum, and constipation, was operated on, with a preoperative diagnosis of chronic appendicitis. The presence of diverticula was discovered at operation. The appendix was removed, and the histologic examination showed a catarrhal inflammation. I did not feel justified in resecting the cecum because, even though the diverticula were present, none of them were inflamed. The patient was improved by the operation but continued to have a dull ache in the region of the cecum.

CASE 4.—Mrs. O. S., aged 55, had had an operation on the uterus some years before, and a nervous breakdown in 1913, one year prior to presentation, but was otherwise healthy. She complained of stomach trouble, gas, and pains in the epigastric region. Vomiting occasionally gave relief from pain. The bowels were constipated, requiring cathartics for any bowel movements. One year ago the patient passed a little blood and mucus. She had been losing weight for seven months (20 pounds, or 9 Kg.). For two months previous to examination she had an imperative desire to move the bowels, the first thing in the morning, and passed only a little blood and mucus, which gave relief. There was always a feeling of unfinished stool. She had an uncomfortable feeling in the abdomen and constant backache for two years. Physical examination revealed that the heart, lungs and chest were normal. A double hernia was present, and there was tenderness over the gall-bladder, appendix and sigmoid. A diagnosis of diverticulitis of the sigmoid and colon was made.

CASE 5.—Mrs. W. P. W., complained of pain in the left side of the abdomen and across the abdomen. The bowels were never constipated. Roentgen examination, in 1921, showed the sigmoid deeply haustrated but not unduly long. On each side of the sigmoid shadow there was a series connected with it by a narrow isthmus. The descending colon was not filled; the transverse colon had rather poor tone. There was a filling defect due to gas distal to the hepatic flexure. A diagnosis of diverticulitis of the sigmoid was made. Operation was not performed. The patient was in St. Bartholomew's Hospital for eleven days. Treatment consisted of diet and enemas. The patient recovered and returned home. She had regular bowel movement daily and no recurrence of pain. No discomfort was felt after eating.

CASE 6.—F. M., aged 38, complained of pain in the left iliac region, a slight fever and severe abdominal cramps, but no chills were present. Examination revealed tenderness and a mass over the left iliac region. Operation was performed in 1917 at the Polyclinic Hospital, with a left rectus incision. The sigmoid was found to be adherent in the iliac fossa and covered with omentum. Numerous diverticula were seen over the area of the lower sigmoid. There was an abscess cavity which was opened into on the lateral outside wall of the lower part of the sigmoid, probably a mural abscess. After considerable difficulty, enough of the sigmoid proximal to the diseased area of the bowel was freed, and four drains were inserted.

CASE 7.—D., a man, aged 49, five months previous to examination in 1925 complained of a dull dragging pain in the lower left side of the abdomen, accompanied by fever (102). Daily irrigations of the lower bowel with rest in bed for two weeks gave complete relief. Several weeks ago the patient had attacks of intermittent pain in the lower left side of abdomen again, accompanied by fever, and relieved in a few days by colonic irrigations. Pain was relieved, but tenderness persisted in the lower left quadrant. The bowels were always regular. He noted some mucus and what he thought was pus in the stools. He lost 30 pounds (13.6 Kg.) in three months. A similar attack occurred four years ago, with pain in the left lower part of the abdomen, fever, and some blood in the stools.

Examination of the abdomen revealed a mass in the left lower quadrant, about 4 inches long and 2 inches wide, tender on palpation. Preoperative diagnosis of diverticulitis with possible malignant degeneration was made. Operation was performed, and a hard nodular tumor resembling carcinoma was found, attached just above the brim of the pelvis on the left side, in the proximal limb of the sigmoid. Resection of the sigmoid was done. Pathologic examination revealed a chronic inflammatory process with no evidence of a malignant condition.

Three months later, the patient was readmitted, presenting a small discharging sinus. He was feeling much improved and had gained in weight. A small abscess was found just below the old opening, and the entire infected area was excised. Recovery was complete.

CASE 8.—A. M. H., a man, aged 60, presented himself for examination in 1909. He gave a previous history of ischiorectal abscess in 1888, which was opened. He had a cosmetic operation afterward. Constipation had been present since then.

In 1901 he had slight rigor with pain in the anus. In 1902 he had a severe attack of chills and fever, tenesmus and severe local pain with discharge of pus. This subsided and was soon followed by another similar attack. In the hospital a retention catheter was passed, and the patient suffered a great deal. He continued to suffer with chills and fever; catheterization was employed several times, and about this time he had pain over the pubis and the left iliac region. The abdominal muscles were rigid. His condition improved, but he passed some gas through the penis, which was attributed to infection with Welch bacillus. The patient had had three or four attacks since 1902. In 1908 he had a severe attack with chills, fever, exhaustion and passage of gas through the penis. Early in 1909, he was examined by Dr. Pederson, who thought he noticed a depression in the bladder. In June 1909, the patient suffered from irritation of the bladder with desire to urinate and tenesmus, which was followed by chills and fever and passage of feces and gas through the penis. Another attack occurred in August.

Operation revealed a large mass, occupying the middle and left portion of the pelvis, which was discovered to be the omentum closely adherent to the sigmoid and bladder. After the omentum was dissected off and the sigmoid lifted up, the fistulous opening into the bladder was seen, and the fistula was dissected out of the bladder and the bladder closed. The sigmoid was found to be enormously thickened. Colostomy was done at the site of the fistulous tract and a catheter was inserted into the bowel. The patient made a good recovery.

The following report gives the observations made at autopsy in a case of diverticulitis:

Postmortem examination of the colon revealed an indurated thickened mass, about 20 cm. above the anus, which completely surrounded the sigmoid, which was 5 or 6 cm. in length, and

caused marked stenosis at the intestine at this place, so that even the little finger could pass through it. On the peritoneal surface there was seen a circular starlike constricting mass, and when the intestine was opened there were found, projecting into the lumen just below this constriction, somewhat polypoid, edematous, beginning gangrenous finger-like projections of the mucosa, from 1 to 2 cm. in diameter and several centimeters in length. This constricting area was cut through with difficulty, and it cut like firm fibrous tissue. When this portion was laid open, the mucosa for a length of about 10 cm. was thrown up into large folds which were edematous and dark red, and some were in the early gangrenous stage. No neoplasm could be found at this region and no ulcerations. The wall of the sigmoid was much thickened and infiltrated by firm radiating bands of tissue, which were fibrous in consistency. Immediately below the constriction, for a distance of about 5 cm., were found several circular openings in the mucosa, several millimeters in width, into which a probe could be inserted for a distance of from 1 to 2 cm., evidently sigmoid diverticula, but which do not project beyond the serosa. Immediately above the constriction were found eight or ten similar small diverticula and through the remainder of the large intestine were found about a dozen more. No definite relationship could be made out between these diverticula and the blood vessels, but most of them occurred along the situation of the mesenteric attachment. The openings into these diverticula were lined with smooth mucosa, none of them being ulcerated or gangrenous. Many were filled with feces. The entire colon was filled with semisolid feces. The caput was tremendously distended; its mucosa was reddened, the serosa was purplish. The site of colostomy was in good condition. A portion of the rectum below the constricting area already described was removed separately. The mucosa was somewhat dilated, smooth and pale; in its upper portion it did not show any diverticula, and the portion 5 cm. above the anus was much reddened and was edematous.

Of 16,283 autopsies done at Bellevue Hospital between 1904 and 1930, many of which were limited to the head or the chest, there were 169 cases of diverticulosis and diverticulitis. At the Mayo Clinic, in one third of all the patients examined roentgenographically, diverticulitis or diverticulosis was present.

New ideas are not plainly accepted by medical men. Time, patience and wide publicity are required before general acknowledgment of worth is given to any new routine. This may be both fortunate and unfortunate; fortunate in being "sure you are right before you go ahead," and unfortunate when years are lost before accepting true value. After 230 years, diverticulitis is now more frequently diagnosed and recognized as a surgical disease. While its origin is not yet settled, this is not of great moment. The important thing is in the recognition of the prediverticulitis stage.

Medical treatment of diverticula is an inherited misconception that it has been difficult to overcome.

There is no more chance of aborting diverticulitis by diet than of aborting appendicitis.

Structural defects are surgical and not medical problems.

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ABSTRACT OF DISCUSSION

Dr. Dudley D. Roberts, New York: I can't overlook this opportunity of disagreeing with my friend Dr. Lynch in several particulars. He has stated that in his opinion colonic diverticulosis is a congenital condition. While in a sense this may not seem especially important, such a view fails to take adequate notice of the fact that colonic diverticulosis is especially a disease of middle and old age and occurs in the obese in a preponderating proportion of instances. This fact must not be lost sight of in the differential diagnosis of abdominal complaints. A lower left-sided abdominal pain in a corpulent patient should give rise to a suspicion of diverticulosis or diverticulitis. My opinion is that a fatty infiltration of the wall of the colon is the most probable cause of these multiple pouchings. Again, he said that there was no medical treatment for diverticulosis and diverticulitis. Such a view overlooks the fact that for a number of years massive doses of barium have been used with the greatest success in relieving the discomforts associated with diverticulosis and even in bringing about a betterment of a secondary inflammatory process in the affected area. This is too important a remedy by far to be passed over casually or entirely overlooked. Dr. Thomas Brown has twitted New York with good reason on its devotion to so-called colonic irrigation. I agree that too much cannot be said in condemnation of this as such a general practice. Its actual danger is sometimes seen in acute perforations of diverticula with local peritonitis. This was forcibly called to my attention this winter when within a period of a fortnight two patients were seen in consultation with what was obviously a peritonitis from a ruptured diverticulum. The condition had been unrecognized and both patients had been having colonic irrigations for several days. The cessation of this treatment was followed by entire recovery in the one case without operative treatment. In the second case general peritonitis had already supervened. It seems extremely probable that under some conditions the introduction of any considerable quantity of water into the rectum might well result in the spread of walled off peritonitis when it has resulted from a ruptured diverticulum in the sigmoid. This should be a matter of more general recognition.

Dr. Julius Friedenwald, Baltimore: While most diverticula do not produce symptoms and are usually only accidentally discovered, they may occasion on the other hand symptoms of a most distressing and even serious type. Those that produce symptoms are ordinarily situated in the colon in the region of the sigmoid. It is in this area that infection is most likely to occur, a condition which is the usual cause for the production of symptoms. The symptoms are often misleading and are frequently attributed to mucous colitis, intestinal indigestion and the like. They may, however, become prominent. In acute diverticulitis, the symptoms resemble those of acute appendicitis situated on the left side. In the less acute forms, the pains may be moderate and are not infrequently associated with disturbances of the bladder; in others, they may be of an obstructive character; in still others, of ulceration, abscess formation and even perforation. The differential diagnosis between carcinoma and chronic diverticulitis is often difficult and, as William Mayo has pointed out, carcinoma may even develop on the basis of a diverticulum. A point in differential diagnosis is that in chronic diverticulitis bleeding is uncommon, while it is frequent in carcinoma. Diverticulitis is easily detected by means of the x-rays, the diverticula retaining the barium, frequently for days following its complete expulsion from the intestine. Small rounded shadows can be noted in the affected areas. It is important in doubtful instances to examine the patient sometime following the evacuation of the barium, that is, on the second or third day, for the lumen of the bowel may be so completely filled with this substance as to obscure the actual condition. In a woman, aged 50, under my care, in whom, because of recurrent attacks of left-sided pain associated with severe constipation and extreme tenderness in the left lower quadrant of the abdomen, diverticulitis was suspected, the roentgen diagnosis of mucous colitis was reported. The pain continued, and since it radiated into the left lumbar region, a cystoscopic examination was advised ten days later. In the course of this examination, at which roentgenograms were again taken, the urologist noted a well advanced diverticulitis of the sigmoid. It was evident that the intestine was still so completely filled with barium at the time of the first examination as to obscure the real picture. When diverticulitis is suspected and not detected at the first roentgen examination, the bowel should be completely emptied of the barium and another examination made a day or two later, when the diverticula, if present, will still be found filled. If the diagnosis, however, still remains doubtful, one should take advantage of the combined method, consisting of the barium enema and air inflation as advised by Fisher and recently by Weber, by means of which not only polypi but also diverticula can be more certainly visualized. In the treatment, when the acute condi-

tion occurs, one is faced with the same problem as that of acute appendicitis and the question of immediate surgical intervention must always be considered. However, in the more chronic cases in which the symptoms do not appear urgent, large doses of barium taken once or twice weekly are often exceedingly valuable in relieving the symptoms as well as in arresting the progress of the condition. Operative intervention should be advised in intractable cases.

RADIOTHERAPY AND SURGERY IN ADVANCED CANCER OF THE BREAST *

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Clinical experience of over a quarter of a century has firmly established the efficacy of surgery, radium and x-rays in the treatment of cancer generally. However, the relative importance of surgery and irradiation varies with the different types of cancer. To take two instances: The clinical study of the last two decades has definitely established the fact that, in cancer of the cervix, irradiation gives results superior to surgery, and the former is today the method of choice. In cancer of the breast, on the other hand, surgery remains the most important therapeutic method, and irradiation is second in importance. This striking phenomenon is, in my opinion, due to the difference in the clinical course of these two types of cancer.

Cancer of the cervix invades the surrounding normal tissues (rectum, urinary bladder, ureters and blood vessels) and regional lymph nodes. Very rarely are metastases formed in distant regions and then only late in the course of the disease.

In carcinoma of the breast, metastases in the distant regions (lymph nodes, lungs, skeleton, liver) appear frequently and early in the course of the disease.

In view of this clinical behavior and the proximity of vital organs to the cervix, surgery will more readily leave behind remnants of cancerous tissue than irradiation, which may at a distance destroy all the cancerous tissue while it leaves the adjoining normal tissue intact.

In cancer of the breast there is less danger of injuring vital organs, and the surgical procedure may be more complete. Furthermore, surgery acts promptly in removing the whole tumor and thus stops immediately the metastatic transportation of tumor tissue, while irradiation acts comparatively slowly and leaves ample time for such transports.

This clinical behavior of cancer of the breast is far from being true in every instance. In reality, various types of cancer of the breast differ greatly in their clinical course, showing greater or lesser rapidity of the local growth and great variations in the frequency of the occurrence of distant metastases. A scirrhous carcinoma of the breast may remain localized for years without disturbing the rest of the organism, while a medullary carcinoma may kill the patient in a few months or even weeks. In some cases the carcinoma of the breast which appears to be in a comparatively early stage will recur locally soon after a most radical operation, and throughout the whole subsequent course of the disease no distant metastases will be noted anywhere. In other cases the result of the operation will be apparently perfect; there will be no local recurrence and yet, as late as twenty-years after the operation, a metastasis will occur in the head of a femur or in the pelvic bones.

Experimental as well as clinical investigations which I [1] have made on the mechanism of formation of metastases in cancer indicate that a secondary metastatic tumor forms only when the transported cancer cells succeed in overcoming the inhibiting powers of the normal tissues of the new locus. Otherwise it may be surrounded by a connective tissue barrier and destroyed. This phenomenon has a practical significance. When the areas in which one knows by experience that metastases occur are irradiated prophylactically, it is sufficient to suppress the proliferating power of the implanted cancer cells without actually killing them.

Notwithstanding these clinical differences, the early formation of metastases is the preponderating manifestation of malignancy in cancer of the breast, and therefore surgery remains the most important method of therapy.

ADVANCED CANCER OF THE BREAST

The next point to determine is whether surgery alone without the aid of radiotherapy ever suffices in a fully developed cancer of the breast. Many surgeons still maintain that irradiation adds nothing to the results of a radical mastectomy.

In 1929, a committee on the treatment of malignant diseases with radium and x-rays of the American College of Surgeons reported [2] on cancer of the breast. The committee has tabulated statistically 774 cases from nine hospitals in four towns. The general conclusion was reached that roentgen treatment does not add anything to the results of radical surgery in the early cases but that the value of x-rays in the treatment of recurrence after operation is established. These two conclusions are evidently contradictory, to say the least. If results can be obtained when a recurrence is already established, it should be easier to succeed when the treatment is begun before the recurrence appears and when there are consequently only microscopic islands of cancer cells to overcome. The only plausible explanation of this discrepancy is that in series of cases studied by the committee the recurrences were irradiated properly while the prophylactic irradiation, on the other hand, was given in a half-hearted manner. Indeed, the committee admits that an accurate statement of the details of roentgen treatment is not possible. "At times low voltage was given, in other hospitals 'more penetrating' radiation was available. Radium was used in only a very small number of cases."

As a result of a quarter of a century of study, covering a large number of cases of cancer of the breast in clinic, hospital and private practice, I can fully subscribe to the following statement of Dr. W. Sampson Handley.[3]

> The key to further advances in the operative treatment of malignant disease is not to be found in statistical studies in which large numbers of cases are superficially studied. It is in the ward and laboratory rather than in the bureau of health statistics that the information we require is to be sought.

In the present paper I shall deal with the advanced cancer of the breast and not with early cancer, and for the former the value of irradiation is admitted even by the committee of the College of Surgeons. Moreover, these statistical investigations reveal the following most

* Read before the Section on Radiology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

1. Levin, Isaac: J. Exper. Med. **18**: 397, 1913; Proc. Path. Soc. **15**: 8, 1915; Ann. Surg. **65**: 326 (March) 1917; J. Nerv. & Ment. Dis. **45**: 481 (June) 1917.
2. Greenough, R. B.: Surg., Gynec. & Obst. **49**: 247 (Aug.) 1929.
3. Handley, W. S.: Surg., Gynec. & Obst. **45**: 721 (Dec.) 1927.

important phenomena: Of the 774 cases studied by the committee, about 15 per cent showed no glandular involvement, and of these patients about 57 per cent, or about 8 per cent of the whole number, remained well for five years. The involvement of the axillary lymph nodes was present in 33 per cent, and of these only 16 per cent, or about 5 per cent of the whole number of patients, remained well for five years after a radical operation.

This statistical analysis shows that a cancer of the breast in which the axillary lymph nodes are involved is an advanced cancer of the breast and, further, that no more than 13 per cent of all the 774 patients whose cases were analyzed remained well five years after the operation, and therefore 87 per cent of all cases of cancer of the breast which come for treatment are advanced cases. These advanced cancers of the breast and not the early cases present today the chief problem in therapy.

Different types of advanced cancer of the breast show different grades of malignancy, take a different clinical course and require different methods of treatment. Broders [4] has initiated a morphologic classification of grades of malignancy. Lee and Stubenbord,[5] however, have shown that, in cancer of the breast, histologic grading of malignancy is far less effective than clinical grading, and my experience fully coincides with this conclusion.

In order to discuss systematically the relative therapeutic value of surgery and irradiation in advanced cancer of the breast, it is best to classify the types of cancer into groups and discuss each group separately. The following eight groups may be considered: (1) primary tumor movable over the chest wall and the axillary lymph nodes involved; (2) similar to group 1 but with involvement of supraclavicular or infraclavicular lymph nodes; (3) similar to group 2, but with ulceration of the primary tumor; (4) primary tumor attached to the chest wall; (5) local recurrence after a radical mastectomy; (6) metastases in the lungs; (7) metastases in the skeleton, and (8) metastases in the liver.

Each of these groups requires a different therapeutic technic and will therefore be discussed separately.

METASTASES IN AXILLARY LYMPH NODES

As previously stated, when the lymph nodes in the axilla are involved, the condition must be considered an advanced cancer of the breast; surgery alone succeeds in only about 16 per cent of the cases in which operation is performed, and the aid of irradiation is quite evidently indicated.

Whenever both the tumor of the breast and the one in the axilla are freely movable over the chest wall and the underlying tissues, the case is an operable one and requires an immediate radical mastectomy.

Preoperative irradiation should not be given in this type of case, since it would delay the operation. Occasionally the patient may even subsequently refuse the operation and insist on the continuation of the radiotherapy.

On the other hand, postoperative irradiation should begin immediately after the operation; in fact, simultaneously with it.

I begin the treatment of these cases with a radical mastectomy and, if the axillary lymph nodes show actual involvement, I then place buried capillaries of radon in the axilla and in the parasternal regions. This is followed subsequently by a course of high voltage roentgen treatment and surface application of radium.

The superiority of this planned systematic combination of surgery with irradiation over unsupported surgery is self evident, since the value of irradiation therapy in the treatment of recurrences is admittedly established.

Again it is extremely difficult to offer irrefutable statistical evidence, particularly since even five years' cure does not mean that the condition may not return as a local recurrence or a metastasis.

The ability to keep the disease in check for a long period of time in a number of cases is a valid proof of the efficiency of a therapeutic measure. Handley [3] devotes the major part of his paper to the presentation of the clinical course of one patient who had a left mastectomy done in 1912, followed by roentgen treatments and radium insertions. Ten years later, a right mastectomy was done. The patient died two years later, or twelve years after the first operation, from metastases in the lungs. The patient remained active and well till two weeks before death. This case shows clearly the efficiency of radium therapy. The following are cases of a similar character which I have treated:

Case 1.—E. C., a woman, aged 24, was admitted to the hospital, April 29, 1921, with carcinoma of the left breast and a large tumor in the axilla. I did a radical mastectomy and inserted capillaries of radon into the axilla and the part of the chest wall corresponding to the breast tumor. This was followed by roentgen treatment and surface application of radium. No metastases were found at the time of operation in the lungs, skeleton, liver or the other breast.

In October, 1923, a tumor was found in the right breast, with involvement of the axilla. I did a mastectomy of the right breast, with insertion of radon, which was then followed by roentgen treatment and surface application of radium. The patient died, Jan. 10, 1929, nearly eight years after the first operation, of pulmonary metastases. With the exception of the last few weeks, the patient was well throughout the eight years and worked, supporting herself and her child.

Case 2.—B. B., a woman, aged 49, was admitted to the hospital, June 26, 1920, with carcinoma of the right breast, and a radical mastectomy was done. Carcinoma was found in the axillary lymph nodes. A carcinoma nodule was also found in the right parasternal region corresponding to the third rib. I immediately placed capsules of radium over the parasternal region and in the axilla. Since then, the patient has had several courses of roentgen therapy and surface application of radium. Today, eleven years since the mastectomy, the patient is clinically well and shows no evidence of recurrence or metastases.

In the first group of cases of advanced cancer of the breast, a certain though small percentage of cases may be cured and therefore this is the primary aim in this group. A complete radical mastectomy must be done and generally an attempt made at complete eradication of the disease. All the other groups to be discussed later are beyond any chance of complete recovery, and the aim of therapy is prolongation of life and creation of a useful or at least comfortable life. In other words, the treatment is, in the main, palliative.

METASTASES IN SUPRACLAVICULAR LYMPH NODES

When cancer of the breast shows the involvement of both the axillary and supraclavicular (less frequently infraclavicular) lymph nodes, the chances of complete recovery are minimal. None the less, a mastectomy should be done when the primary tumor is movable over the chest wall. A separate incision is made over the clavicle, and radon capillaries are inserted in the axilla, the supraclavicular region and the chest. This

4. Broders, A. C.: Arch. Path. & Lab. Med. **2**: 376 (Sept.) 1926.
5. Lee, B. J., and Stubenbord, J. G.: Surg., Gynec. & Obst. **47**: 812 (Dec.) 1928.

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is followed by high voltage roentgen therapy and surface application of radium. I have had a number of patients who lived in comfort for three or four years with such treatment. But they all ultimately succumb to the disease.

ULCERATED CANCER OF THE BREAST

In the previous two groups, surgery remains the major method of therapy and the irradiation a very important adjuvant which must follow and not precede surgery. In the following groups the irradiation is the major procedure, it always antecedes surgery, and the latter is employed only occasionally.

A patient suffering from a large ulcerating tumor of the breast which constantly secrets a foul discharge is a burden to herself and to her surroundings. When there is no evidence of multiple metastatic nodules in the skin surrounding the ulcerating tumor, the case is treated in the following manner: An insertion of radon capillaries is made into and around the ulcerated area of the tumor, and this is followed by surface applications of radium and by roentgen therapy. After a period of from four to six weeks, the ulcer generally becomes diminished in size and the tumor becomes more freely movable over the chest wall. A mastectomy is then done, with the removal of the pectoral muscles and with a more or less complete cleaning of the axilla, depending on the conditions found. Only enough skin is removed to excise widely the ulcerated area and to allow for an immediate primary union.

It must be clearly understood that this represents only a palliative procedure. It seems, however, not only to prolong life but mainly to make the life of the patient more bearable. It is much more comfortable for the patient, both bodily and mentally, to succumb ultimately to metastases than to live for months with a large fungating carcinomatous ulcer.

The following cases serve to illustrate this group:

CASE 3.—S. C., a white woman, aged 69, was admitted to the hospital, May 22, 1924, with advanced cancer of the right breast. On examination there was found a stony hard mass in the upper half of the breast. It was about the size of a grapefruit and was attached to the skin but was movable off the deep structure. There was an ulceration, roughly circular and 6 cm. in diameter, overlying the central part of the tumor. The right nipple was drawn upward toward the tumor. In the right axilla there was a large stony hard mass which was movable over the underlying tissues. No distant metastases were noted. The diagnosis was proved microscopically. June 21, radon capillaries were inserted into the ulcerated area of the breast. The tumor shrank, and the ulceration diminished in size. A mastectomy was performed, July 24. The wound healed by primary union and the patient improved rapidly in her general condition. When she was last seen, sixteen months after the operation, there was no evidence of any local recurrence or metastases.

CASE 4.—M. D., a white woman, aged 77, was admitted to the hospital, Aug. 3, 1929, with an advanced cancer of the right breast. On examination the right breast appeared smaller than the left and was pulled to the right and upward. About 3 cm. above and to the right of the nipple there was noted a round ulcer, 2 cm. in diameter, somewhat elevated above the surface of the breast, and of a pinkish red. On palpation the base of the ulcer was very hard and was attached to a diffuse mass which occupied the right upper quadrant of the breast. The right axilla contained several lymph nodes hard in consistency. The diagnosis of carcinoma was proved microscopically. August 27, capillaries of radon were inserted into the ulcerated area of the tumor. September 5, the mass diminished in size and became softer in consistency. October 29, a mastectomy was done. The wound healed by primary union, and the local and general condition has been good since.

In all these cases the mastectomy was followed by high voltage roentgen therapy and surface application of radium.

BREAST TUMORS ATTACHED TO THE CHEST WALL

In all the cases of the fourth group the tumor is attached to the chest wall and, as long as this condition lasts, surgical removal is contraindicated, since a severe local recurrence would follow the operation. In this group, therefore, radiation therapy is the only method to employ in the majority of cases. Whether the primary breast tumor is ulcerated or not, an insertion of radon should be made into the primary tumor and into the metastases in the axilla, which are always present in these cases. This is followed by high voltage roentgen therapy and surface application of radium. The tumor usually shrinks under this treatment, and the ulceration is covered with an epidermis.

In a certain number of these cases the tumor not only shrinks but becomes movable over the chest wall. In such an instance a palliative mastectomy may be performed with temporary benefit and possible prolongation of life. In the following cases the tumors became movable after the intratumoral insertion of radon:

CASE 5.—M. E., a white woman, aged 63, was admitted to the hospital, May 21, 1925, with advanced cancer of the right breast. On examination of the right breast, the nipple was found replaced by a hard indurated mass. Another mass was noted in the lower outer quadrant of the breast, ulcerated in the center. The masses were firmly adherent to the chest wall. The diagnosis of carcinoma was proved microscopically. June 10, a radon insertion was done into the two carcinomatous masses of the breast. This was followed by high voltage roentgen therapy. August 3, the tumors were found to be freely movable over the chest wall, and on August 12 a palliative mastectomy was done. The wound healed by primary union and when the patient was seen last, eighteen months later, there was no evidence of any local recurrence or metastases.

CASE 6.—G. M., a white woman, aged 60, was admitted to the hospital, Feb. 29, 1924, with advanced cancer of the left breast. On examination of the left breast there was noted in the upper outer quadrant a tumor mass measuring 6 by 2 cm., firmly adherent to the chest wall and ulcerated in the center. No metastases were found in the chest or skeleton. March 27, radon capillaries were inserted into the tumor. On April 14 and still more on April 29, the tumor appeared smaller in size and freely movable over the chest wall. May 8, the mastectomy was done, the wound healed and the patient left the hospital. Feb. 3, 1925, roentgen examination showed the appearance of skeletal metastases. The patient died, May 5, about fifteen months after the beginning of the treatment.

This purely palliative treatment of these patients certainly added greatly to their comfort.

LOCAL RECURRENCE AFTER MASTECTOMY

Recurrent tumors in the mastectomy field are most usually adherent to the chest wall and therefore, like the tumors in group 4, must be treated by irradiation. The only surgical procedure in this type of case consists in an incision over the tumor mass so as to facilitate the intratumoral insertion of radon and possibly in doing a biopsy. Only temporary improvement may be obtained in this group of cases.

None the less, as may be seen from the following case, very satisfactory results may follow this course of treatment:

CASE 7.—A. E., a woman, aged 58, had a radical mastectomy done for carcinoma of the left breast with involvement of the axilla, in September, 1926. Oct. 31, 1927, a local recurrence appeared in the sternocostal junction corresponding to the third and fourth rib. I made an incision over the tumor mass, performed a biopsy, which gave positive results, and did an inser-

tion of radon capillaries. This was followed by high voltage roentgen therapy and surface application of radium. At present, nearly five years after the mastectomy, there is no evidence of any local recurrence or metastases anywhere, and the patient is comfortable and takes care of her work.

METASTASES IN THE LUNGS

The life of a patient with pulmonary metastases secondary to a cancer of the breast is short and extremely uncomfortable. The condition is hopeless, and, as a general rule, irradiation does not improve it. None the less, all these patients should be given the benefit of radiotherapy, since occasionally striking temporary improvement may be obtained, as is well seen in the following case:

Case 8.—M. P., a white woman, aged 39, was admitted to the hospital, March 25, 1930, with a history of having noticed a mass in the right breast eighteen months previously and an ulceration for the last six months. The patient also complained of dyspnea and cough.

On examination the right breast was transformed in its entirety into a flat hard and nodular tumor mass, irregularly round in outline, measuring about 15 cm. in diameter and about 3 cm. in thickness, firmly adherent to the chest wall. Surrounding and partly undermining the nipple there was a flat ulceration measuring about 8 cm. in diameter. A hard and nodular tumor, measuring 3 cm. long and 2 cm. thick, was found in the axilla. On percussion of the chest the right side showed dulness everywhere and on auscultation total loss of breath sounds.

Roentgen analysis showed an opacity throughout the right side, with the exception of a small area just beneath the inner aspect of the clavicle. No distant metastases were found elsewhere. A diagnosis of carcinoma of the breast with metastases to the pleura and lungs was made. March 27, a thoracocentesis was done and 1,000 cc. of straw colored fluid was obtained; then a specimen of tissue for a biopsy was taken from the ulcerated area, which confirmed the diagnosis, and radon capillaries were inserted into the tumor of the breast and of the axilla. June 20, the thoracocentesis and the radon insertion were repeated. This was followed by roentgen and surface radium therapy. No further thoracocentesis was necessary; the ulcerated area is covered with skin, and in the last roentgen analysis of the right lung the tissue appears clear throughout the upper and middle lobe. Neither the tumor of the breast nor the one in the axilla was palpable at the time. The patient lost her distressing symptoms of cough and dyspnea and felt clinically well without any evidence of local recurrence or metastases elsewhere until April, 1931. Then, suddenly symptoms of cerebral metastasis developed, and she died, April 16.

The therapeutic result of irradiation in this case was certainly remarkable, and had it not been for the cerebral metastasis which is comparatively infrequent in cancer of the breast, the patient's life might have been prolonged still further.

SKELETAL METASTASES

Most remarkable results are obtained occasionally in the treatment of skeletal metastases of carcinoma of the breast by the aid of surface application of radium and roentgen therapy. I have already reported several such cases, but the following case may be added:

Case 9.—T. C., a woman, aged 36, who entered the hospital, March 22, 1922, was suffering with paraplegia and complained of severe pain in her back and inability to move. Roentgen analysis showed diffuse metastases of the skeleton, involving the dorsal and lumbar spine and all the pelvic bones, as well as the skull. Subsequently the cervical spine also became involved, so that the patient was lying rigid in bed without being able to move either the lower extremities or the head. At one time, respiration became extremely difficult. The patient remained at the hospital for two and one-half years until late in November, 1924. In the course of her stay at the hospital, she received surface radium applications and roentgen treatments practically throughout her whole skeleton. She gradually began to improve, so that toward the end she was able to walk about without any support or help, had practically no pain anywhere, and at her own request she was discharged in November, 1924. Examination of the skeleton revealed a great deal of new bone formation throughout the skeleton, which apparently made the spine firm and healed the clinical paraplegia.

This case is very remarkable in view of the complete generalization and immense amount of metastatic carcinoma throughout the organism and also in view of the large amount of therapy that the patient received in the course of two and one-half years. The clinical result is very striking. While it is fairly certain that the carcinoma tissue had not all been destroyed within the organism, a bedridden patient with paralysis of both lower extremities, with severe pain on the least movement of any joint, was able to leave the hospital in a condition in which she could walk about and take care of herself.

METASTASES IN THE LIVER

Metastases in the liver secondary to carcinoma of the breast usually indicate generalized carcinomatosis of the organism, and such patients are therefore beyond any type of specific therapy.

In all types of advanced cancer of the breast, it is necessary to examine at frequent intervals the lungs, liver and skeleton, and to change the methods of treatment or to cease treatment entirely, depending on the condition.

It is important to know in this connection that in a patient in apparently good general condition, and suffering possibly only from local recurrence, gastric symptoms may suddenly develop, with severe uncontrollable vomiting. This is frequently the first symptom of the development of metastasis in the liver.

SUMMARY

About 87 per cent of all patients with cancer of the breast come for treatment when already in the advanced stage of the disease.

However, distressing symptoms may be relieved and life prolonged considerably in many of these advanced cases by proper coordination between surgery, radium and roentgen therapy.

Different types of advanced cancer of the breast require different methods of therapy. They may all be divided into the following groups:

1. Cases showing metastases in the axillary lymph nodes. The primary tumor is movable over the chest wall and no distant metastases are present.

2. Cases similar to those in group 1, but with metastases present in the supraclavicular or infraclavicular regions. In these two types of cases, surgery should be the first step. The surgical procedure should be radical, and active irradiation should follow immediately.

3. Tumors which are ulcerated, but movable over the chest wall. In this type, radiotherapy should precede and follow surgery. Though palliative, very satisfactory results may be obtained.

4. Tumors attached to the chest wall. Radiotherapy is the first step. Only if the tumor becomes movable over the chest wall may surgery follow.

5. Local recurrence after radical mastectomy. These cases should be treated in the same manner as the tumors in group 4. Results in groups 4 and 5 may be as good as in group 3.

6. Cases with metastases in the lungs. These cases should all be treated by radiotherapy, since occasionally a good temporary result may be obtained.

7. Cases with metastases in the skeleton. Radiotherapy should be used, for the same reason as in group 6.

8. Cases with metastases in the liver or with generalized carcinomatosis. These cases are beyond any type of therapy.

At present not the early but the advanced cancer of the breast presents the most pressing therapeutic problem.

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ABSTRACT OF DISCUSSION

DR. LEON T. LE WALD, New York: Dr. Pfahler in his statistics has made the statement that after five years he has had 30 per cent of the patients free from disease after radiation treatment of primary inoperable cancer of the breast. This is an interesting percentage as against the various surgical percentages. The surgical statistics that I have heard vary from 16 per cent of five-year cures to somewhere in the thirties; so that when one matches these statistics one finds that radiation therapy holds its own versus surgery, even in certain cases that are regarded as operable. In the operable cases, various statistics do not give much more than 22 per cent of five-year cures following operation. Dr. Burton J. Lee has now a series of operable cases in which the patients have been treated by irradiation alone with a favorable outcome. Dr. Levin has been fair in stating that he would have the first group operated on prior to radiation but have the radiation therapy applied immediately following or at the same time in the open wound, inserting radon or using other methods of applying radium. As a neutral party I feel that he has amply proved his point.

DR. GEORGE E. PFAHLER, Philadelphia: We agree that if cancer of the breast is strictly confined to the breast, the surgeon can certainly take it away. Some men point to as high as 100 per cent recoveries in such cases, but only after they have passed the specimen to the pathologist and he has made a careful study do they find that the disease is confined to the breast. Then if the disease is found to have spread to the axilla, it is not classed as a case of primary carcinoma of the breast. That is all very well scientifically, but it doesn't apply so well to the individual woman who comes to us for advice as to treatment. When there are palpable lymph nodes in the axilla or the supraclavicular region, preliminary irradiation by means of the x-rays before operation would give the greatest chance of recovery. Dr. Lee showed, in a symposium before the American Radium Society two days ago, that in about 42 per cent of the cases in which there were no palpable lymph nodes metastasis was still found in the axilla. Therefore one must assume that even though lymph nodes are not palpable such lymph involvements are liable to be present, and one must treat on that basis. That is the reason for considering an early case from a radiologic standpoint. Samson Handley says that when a case of cancer of the breast comes to the surgeon it is already an intrathoracic disease. The preliminary irradiation, consisting of 100 or at least 90 per cent of an erythema dose given over the axilla and supraclavicular region, over the mediastinal space and perhaps over the breast areas, though that is less important, will be helpful in preventing recurrences. I reported before the American Radium Society on 1,022 cases of carcinoma of the breast that were treated by irradiation. The best results were obtained in the cases in which surgery and irradiation were combined when axillary lymph nodes were involved. That applies, as Dr. Levin has said, to at least 87 per cent. Dr. Lee estimated the group that comes with the disease confined to the breast as 6 per cent; therefore, 94 per cent must be considered in relation to metastasis. In cases in which we had irradiation combined with surgery (inoperable cases with lymphatic involvement), 56 per cent were symptom-free at the end of five years. The successful results from irradiation in that group of cases are somewhere between 15 and 22 per cent, but even if one takes the highest point, 22 per cent, one still gets two and one-half times as many well as one will if he adds to the irradiation the primary cases.

DR. WILLIAM HARRIS, New York: I should like to bring up a point that concerns implanting the axilla with radon seeds after radical mastectomy. One is impressed by the rare occurrence of palpable disease in the axilla after this operation, even after it is known that the carcinoma has not all been removed from the axilla and also in patients in whom metastatic disease may be widespread throughout the body. I should be grateful for discussion on this point.

DR. ISAAC LEVIN, New York: I selected Dr. Le Wald to open the discussion since I wanted him to act as umpire between surgeons and radiologists, an office which he filled in St. Luke's Hospital in New York with success for many years. If I had had my present experience when I was young, I should have settled in Philadelphia, where Dr. Pfahler can give leisurely preoperative irradiation without encountering any interference from the general surgeons. In New York if one general surgeon is willing to wait for the operation until the irradiation is completed, another less painstaking surgeon will proceed with an operation frequently incomplete and unsatisfactory in its nature, or even an unnecessary one. Years ago I reported a series of cases of carcinoma of the breast in which skeletal metastases were present at the time the radical mastectomy was performed. I therefore advised that a roentgen analysis of the skeleton be done before every radical mastectomy. The patient will be served best when the operation will be done expeditiously and irradiation done simultaneously with the operation. The insertion of buried or removable radon capillaries into the axilla in the course of a radical mastectomy does not add to the hazard of the operation; there is no sloughing, suppuration or any other disturbance. I have treated many patients with this technic in the last ten years, and I can state emphatically that such irradiation of the axilla offers no difficulty either to the surgeon or to the patient.

Clinical Notes, Suggestions and New Instruments

TRAUMATIC PNEUMOCEPHALUS

CHARLES F. THOMPSON, M.D., AND JEWETT V. REED, M.D.
INDIANAPOLIS

At the meeting of the Philadelphia Neurological Society, Oct. 24, 1930, Miller, Klemmer and Snoke[1] reported a case of traumatic pneumocephalus and discussed the rarity of recovery following this condition. Including their case they could find only seven instances of recovery reported in the literature. Their table of recovery is copied herewith, to which is added our case.

Cases of Traumatic Pneumocephalus

Case Reported by	Cause of Condition	Cranial Air Sinus Involved	Recovery
1. Wolff, 1914	Bullet	Frontal	Operation
2. Potter, 1919	Fracture	Frontal	Spontaneous
3. Teachenor, 1923	Fracture	Mastoid	Spontaneous
4. Dandy, 1925	Fracture	Frontal	Operation
5. Dandy, 1925	Fracture	Mastoid	Spontaneous
6. Davidson, 1927	Fracture	Frontal	Spontaneous
7. Miller, 1928	Fracture	Frontal	Operation
8. Thompson, 1930	Fracture	Mastoid	Spontaneous

The following is a summary of our case of traumatic pneumocephalus: C. D., a man, aged 37, Negro, was taken to the Indianapolis City Hospital, Aug. 19, 1930, following an accident in which he fell about 15 feet, striking the right side of the head.

Examination showed the patient to be in a semiconscious condition. Above the right ear was an abrasion of the scalp. There was a profuse bloody discharge from the right ear. This blood did not clot, suggesting a mixture with cerebrospinal fluid. The right pupil was larger than the left. The patient was too stuporous to answer questions but he could be made to move both arms and legs voluntarily. The pulse was 60, the blood pressure 92 systolic and 54 diastolic, and respiration 18. Marked emesis was present.

1. Miller, S. W.; Klemmer, R. N., and Snoke, P. O.: Traumatic Pneumocephalus, Arch. Neurol. & Psychiat. **25**: 903 (April) 1931.

The wound was cleaned and dressed. Sterile gauze was placed over the discharging ear, and 50 cc. of 50 per cent dextrose was given intravenously.

In twenty-four hours his state of semiconsciousness persisted. He still vomited frequently. The corneal reflex was absent on the right side and both the orbicularis oculi and levator palpebrae superioris of the same side were paralytic, together with the muscles of expression, indicating injury to the third, fifth and seventh cranial nerves on the right. The amount of drainage from the right ear canal continued the same but its character changed to a serosanguineous type.

Fig. 1.—Anteroposterior view showing air in cerebral ventricles and subarachnoidal space.

On the third day roentgenograms of the skull disclosed a linear fracture in the right temporal area extending downward into the midportion of the mastoid portion of the temporal bone. The right ventricle was filled with air and there was also air over the surface of the brain in the anterior portion of the right frontal area. Up until this time there had been a copious discharge of blood stained cerebrospinal fluid from the right ear. On the fourth day this discharge stopped. The patient's general condition, however, remained the same. A lumbar puncture was then done which showed a pressure of 15 mm. of mercury with blood tinged cerebrospinal fluid. Eight cubic centimeters of this fluid was withdrawn until the manometer read 7 mm. of mercury. This procedure was repeated every forty-eight hours and after three punctures the patient's consciousness was restored and the pulse rate returned to normal.

We do not consider it wise to do a lumbar puncture in head injuries when there is a leakage of cerebrospinal fluid through a compound fracture of the skull, as there is some danger of so reducing the cerebrospinal pressure that there might be an aspiration of infected material at the site of fracture. In this case when the drainage from the meatus ceased we felt that the puncture was safe and, in fact, indicated.

The patient was discharged on the twentieth day, walking with a slightly spastic gait, with all tendon reflexes exaggerated, complete paralysis of the muscles of expression on the right side, partial loss of hearing in the right ear, partial paralysis of the right orbicularis oculi and levator muscle of the upper lid, partial paralysis of all extra-ocular muscles of the right eye except the superior oblique and the lateral rectus, and paresis of the muscles of mastication on the right side. There was effort cephalalgia of severe degree.

The patient returned to work in December, 1930, practically free from all symptoms except slight disturbance in gait and right facial paralysis.

When last examined, in September, 1931, the patient stated that he had continued to work, without headache, facial disturbance or diplopia, but that marked deafness in the right ear persisted. At times he complained of stiffness in his legs. Examination showed increased knee jerks but was otherwise negative. Right facial paralysis was almost entirely cleared up, so that it was not noticeable except on careful examination.

This case may be summarized as one demonstrating traumatic pneumocephalus in which the air was admitted to the subarachnoid space through simple fracture of the mastoid air cells and thence to the right ventricle by way of the foramina of Luschka and Magendie. Whether or not the pneumocephalus was a causative factor in the symptoms will remain in the realm of conjecture because the amount of cerebral concussion was sufficient to cause all the functional disturbance and clinical symptoms in this man.

COMMENT

Air may be introduced within the cranial cavity, concurrently with head injuries, by compound fractures of the skull with laceration of the dura mater, by deep perforating wounds of the gun-shot type, and by simple fractures involving the cranial air sinuses. Rarely gas-producing organisms may be the source of intracranial air in an infected wound which has perforated the skull. The air may occupy the subarachnoid space, the subdural space, the brain or the ventricles, and Dandy, in reviewing twenty-eight cases, cites fractures which render air passage from the mastoid cells and paranasal sinuses into the aforementioned spaces as the most frequent cause.

The mechanism of this phenomenon, in the presence of a trans-sinus fracture, is one of two types: suction of air replacing overflow of cerebrospinal fluid as in the example of an inverted narrow-necked bottle which contains fluid; or the sudden increase of air pressure within an air sinus at the moment of coughing or sneezing over the prevailing intracranial pressure. In addition to either of these mechanisms, the ball valve action of a bone fragment, tissue flap or possible foreign body may aid in the retention of air within the cranium. Thus it may be seen that air may pass through the fracture line intermittently as long as an avenue exists and buoyancy admits it to any part of the subarachnoid space and ventricular system. Humes has demonstrated that from fourteen to twenty-one days' time is required for the absorption of air filling the ventricles in artificial pneumocephalus; hence it is readily understood how air may persist in the ventricles for months after a fracture, as reported in some cases, in which the volume rate of introduction exceeds that of absorption.

Pneumocephalus occurring at the time of a severe head injury is merely an unusual clinical phenomenon, any possible symptoms being superseded by those of concussion, as was true in our case. However, if any of the classic signs of increased intracranial pressure persist, after any possible temporary brain trauma has subsided, otorrhea or rhinorrhea with sneezing is sufficient to make a diagnosis of pneumocephalus. Roentgenologic examination should confirm the diagnosis.

Fig. 2.—Lateral view showing the same and in addition a linear fracture of the temporal bone.

The prognosis in pneumocephalus of traumatic type on the whole is good. It may be noted with interest that intracranial infection complicating a cerebrospinal fistula occurred in only 25 per cent of the reported cases. Spontaneous closure of the draining sinus is accomplished in the majority of cases, and the intracranial air is absorbed by natural processes.

The successful treatment of those cases of pneumocephalus with a cerebrospinal fistula which does not heal spontaneously depends on surgical closure of the tract. Dandy[2] reports the

2. Dandy, W. E.: Pneumocephalus (Intracranial Pneumotocele or Aerocele), Arch. Surg. **12**: 949-982 (May) 1926.

use of fascia lata for the closure of a dural sinus in the frontal area. Surgical closure should be obtained as soon as the diagnosis is made; time spent in waiting for spontaneous healing is needless procrastination, for such plastic operations carry little risk.

320 North Meridian Street.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

W. A. PUCKNER, Secretary.

IODOXYBENZOATES OMITTED FROM N. N. R.

The known action of iodoxybenzoates led to clinical application of the drug in the treatment of arthritis by Young and Youmans.

In 1926 the Council reported on the clinical work of Young and Youmans, stating that a selected number of clinicians had been supplied with *o*-iodoxybenzoic acid prepared under the supervision of Young and Youmans for controlled hospital trials, and that the A. M. A. Chemical Laboratory was carrying out a chemical study with the intention of elaborating tests and standards which would insure a satisfactory supply of salts of *o*-iodoxybenzoic acid.

In consideration of the further reports by Young and Youmans and confirmatory evidence by others, the Council in 1927 admitted ammonium *o*-iodoxybenzoate with the standards elaborated by the A. M. A Chemical Laboratory to New and Nonofficial Remedies under the nonproprietary name amiodoxyl benzoate and admitted the product of the Abbott Laboratories, which had been found to meet the adopted standards, as Amiodoxyl Benzoate-Abbott.

Confirmatory reports, however, failed to establish the usefulness of the drug and in 1930 the Council decided to omit the drug from New and Nonofficial Remedies unless new and favorable evidence became available. Such evidence had not become available with the close of 1931 and, accordingly, the Council directed omission of the article Iodoxybenzoates and of amiodoxyl benzoate with the accepted brand Amiodoxyl Benzoate-Abbott.

SQUIBB ADEX TABLETS 10 D NOT ACCEPTABLE FOR N. N. R.

E. R. Squibb & Sons requested recognition of the name Squibb Adex Tablets 10 D for a cod liver oil concentrate fortified by addition of viosterol. The firm stated: "In our work on the development of the cod liver oil concentrate tablet which has heretofore been sold under the name of 'Adex,' we have developed a wholly new and novel preparation, the active therapeutic ingredients of which are vitamins A and D in exceptionally high concentration, and so compounded as to preserve the concentration unimpaired for years. This new tablet is not a mere concentration of cod liver oil. The vitamin A in the tablet and a part of its vitamin D are obtained by concentrating cod liver oil, but the remainder of the vitamin D in the new tablet is irradiated ergosterol." In regard to the stability of these tablets, the firm wrote: "By actual test the vitamin content of these tablets is known to be stable with no detectable deterioration either of vitamin A or D over a period of more than thirty-four months, the time thus far elapsed since our stability tests started. There are four reasons for this remarkable concentration and stability. 1. A special manufacturing process is used which protects the vitamins throughout the entire time or processing. 2. An ingredient is added which acts as an active protection against deterioration of the vitamins, particularly vitamin A. 3. A specially devised coating is applied under controlled conditions which further guards against loss of vitamin potency, and 4, the tablets are packaged under carbon dioxide. Some of these steps are protected by patent application and others are not of a nature capable of such protection. If the Council desires this information in greater detail, we will supply it. So far as we are informed, no other tablet receives this unique treatment looking toward the preservation against deterioration of its labile-active ingredients."

The Council has repeatedly called attention to the fundamental importance of its rule designed to prevent the multiplication of names for the same product. This rule provides that the discoverer of a new product or of a new and sufficiently important therapeutic use for an old product may give it an arbitrary name. Squibb & Sons are not the first to prepare a cod liver oil concentrate nor does the addition of viosterol to a cod liver oil concentrate present a discovery. While Squibb & Sons deserve credit for the efforts which they have made toward increasing the potency and stability of cod liver oil concentrates, other firms which are engaged in the marketing of such products have worked in the same direction.

The Council considered the arguments advanced by Squibb & Sons in favor of the recognition of their proprietary name for their cod liver oil concentrate with viosterol and decided that in conformity with its rules governing the recognition of proprietary names, it cannot recognize the name Squibb Adex Tablets 10 D because the application of a proprietary name to this product is not in the interest of the medical profession or the public and declared Squibb Adex Tablets 10 D unacceptable for New and Nonofficial Remedies.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

BUTTER CREAM BREAD

Manufacturer.—Anchor Bread Company, Sacramento, Calif.

Description.—A white bread made by the sponge dough method.

Manufacture.—The sponge dough ingredients, patent flours of Western and Northwestern wheats, water, salt, yeast and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, sucrose, butter and cream to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms for the materials used are kept in strictly sanitary condition.

Analysis (submitted by manufacturer).—

	per ounce
Moisture (entire loaf)	35.5
Ash	0.8
Fat (ether extraction method)	2.5
Protein (N × 6.25)	9.6
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	51.4

Calories.—2.7 per gram; 77 per ounce.

Claims of Manufacturer.—A bread of good quality.

VINCENNES "CLASS A" BRAND TOMATO JUICE AND VINCO TOMATO JUICE

Manufacturer.—Vincennes Packing Corporation, Vincennes, Ind.

Description.—Pasteurized tomato juice with added salt; retains in high degree the vitamin content of the raw juice.

Manufacture, Chemical Analysis, Calories, Micro-Organisms, Vitamins, Claims of Manufacturer.—See these sections for Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

RADIOLOGIC SERVICE IN THE UNITED STATES

REPORT BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The work of preparing a list of acceptable "radiologic laboratories and departments of radiology" was assigned to the Council on Medical Education and Hospitals by the House of Delegates at the Minneapolis session in 1928. The "Essentials" were prepared by the Council in collaboration with a large number of specialists in the field of radiology. Suitable questionnaires were prepared in the same manner and were mailed to all the physicians who were known to be engaged in the practice of radiology and roentgenology. The majority of the physicians so engaged returned their questionnaires and they were considered for the list. To assist the Council in preparing the list, the officials of the two leading radiologic societies cooperated with the Council's special committee by appointing qualified radiologists in all parts of the country to act as advisers. These advisers, numbering 198, examined the credentials of applicants from their respective localities, made inspections, and advised which candidates could qualify, according to the "Essentials." The resulting tentative list, together with a detailed report on the survey, was published in the Radiologic Number of THE JOURNAL, May 23, 1931.

Since various branches of medicine look to the radiologist for important aid in diagnosis and treatment, the careful certification of physicians qualified in radiology should be made to protect the patient and the profession. A powerful influence in the regulation of those qualified is, of course, membership in special radiologic societies. This membership immediately bars the lay practitioner and, to some extent, the physician who has not had adequate training and experience. Membership lists of the special societies include the names of many whose main interest lies in other specialties.

The Council has understood from the beginning and has advocated the principle that the practice of radiology is the practice of medicine. It has followed this principle in the interpretation of the essentials, in the preparation of its lists and in every opportunity that the Council has had to express itself on this point to the entire medical profession.

EMPHASIS PLACED ON SPECIALISTS

At first the emphasis was on laboratories and departments of radiology and roentgenology. Both the questionnaire and the "Essentials" laid stress on the laboratories, including equipment, personnel, records and publicity. The tentative list referred to laboratories or departments of radiology and roentgenology. But difficulties were found in the listing of laboratories as such, because laboratories change names; they also change directors and ownership, these changes often resulting in an entire change of methods and sometimes a reversal of ethical principles. It became apparent that the determining factor in radiologic service is the specialist who does the work or supervises it. Emphasis, therefore, was shifted from the laboratory to the directing radiologist, the main emphasis now being placed on his qualifications.

The "Essentials" have been recently revised to correspond with this new point of view, and the newly revised "Essentials," as adopted by the Council at its meeting in February, 1932, are printed in connection with this article.

HOW THE LIST IS COMPILED

The routine by which all applicants are admitted to the list is as follows:

1. A questionnaire is sent to all specialists in the field who, according to information, seem to have the necessary qualifications.

2. On receipt of the returned questionnaire, the record and credentials of the applicant are verified in the biographic file of the American Medical Association.

3. Each application is submitted to at least three or more advisers, who give their estimate and opinion of the qualifications of the applicant, based on personal knowledge or inspection, or both.

4. Membership in special societies is looked up, and the advice of the officers of those societies and the officers of county medical societies, and of councilors, is obtained.

In this way the principle is observed that specialists should be judged by specialists. Those who work and associate with specialists have the best opportunity of knowing them. Due attention is also given to the records in the biographic file of the American Medical Association and to the individual's own report on himself and his work.

The first survey covered mainly those radiologists who were conducting laboratories of their own and included, also, those that were connected with hospitals, but did not include others, such as those who teach and supervise radiologic work in medical schools and those working in research institutions and government departments. More recently, the work has been extended to all of these fields. Questionnaires have recently been sent out and applications received from thirty-two of these specialists who were not included in the first survey. There has not been time to give to all the later applications the consideration that is due them, which will explain the omission of some from the list contained in the accompanying pages.

Additions and revisions will be made from time to time; suggestions for changes will be received and consideration of new applications will go on continuously. Cooperation by the men in the specialty has been excellent and must continue in order that the work may be of optimum value.

PATHOLOGISTS AND CLINICAL PATHOLOGISTS

The list of clinical pathologists which accompanied the list of radiologists in the Radiologic Number for May 23, 1931, is not included in the present issue but is being revised for a later issue of THE JOURNAL. This will give the necessary time for a thorough revision of that list, including a classification of pathologists and clinical pathologists so as to form a more accurate and a more useful list. Also, the pathologists and clinical pathologists connected with medical colleges, research institutions and government departments will be included, as is being done in the case of the radiologists.

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ESSENTIALS FOR ADMISSION TO LIST OF PHYSICIANS SPECIALIZING IN RADIOLOGY

Physicians Eligible

Consideration for admission to the list is open to all regular licensed physicians engaged in radiologic work in accordance with the essentials, whether connected with a hospital or conducting an independent laboratory.

1. Qualifications

(*a*) The candidate shall be a graduate of a medical school that is approved by the Council on Medical Education and Hospitals and shall be licensed to practice medicine in the state in which his department is located. He shall also have had special training, such as is approved by the Council, in radiology, roentgenology or radium therapy at an acceptable school—preceptorship, hospital or clinic, department of radiology, roentgenology or radium therapy—for a period of at least three years, or, in lieu of such training, shall have had a minimum of five years' experience in the exclusive practice of radiology, roentgenology or radium therapy. He must be a man of good standing in the medical profession, and particularly among those specializing in radiology. He shall either be on a full time basis or have definite hours of attendance at the department, such hours to be ample to insure the element of medical consultation in every examination or treatment.

(*b*) The department shall be under the direction of a physician radiologist, roentgenologist or radium therapist, as the circumstances may require. The director shall be responsible for all examinations and treatments. He shall be responsible for all professional assistants and for the efficient maintenance of the department.

Physicians employed by laboratories which are under lay control and direction will not be eligible for consideration for this listing.

(*c*) *Assistants.*—The director may have a corps of qualified medical and technical assistants responsible to him, and for whom he is responsible, to carry out accurately the various functions of the department.

2. Definitions

Radiology.—The branch of medicine which deals with the diagnostic and therapeutic application of radiant energy, including roentgen rays, radium, ultraviolet rays and other spectral radiation.

Department of Radiology.—A private laboratory or department of a hospital, clinic or other institution, organized and equipped for the diagnostic and therapeutic application of radiant energy, including roentgen rays, radium, ultraviolet rays and other spectral radiation.

Radiologist.—A qualified physician who also has obtained adequate special training and experience in general radiology.

Roentgenology.—The phase of radiology which deals with the diagnostic and therapeutic application of roentgen rays only.

Department of Roentgenology.—A private laboratory or department of a hospital, clinic or other institution organized and equipped for the diagnostic and therapeutic application of roentgen rays only. A department organized and equipped solely for the diagnostic or therapeutic application of roentgen rays shall be known as a department of diagnostic or therapeutic roentgenology, respectively.

Roentgenologist.—A qualified physician who has had adequate training and experience in the diagnostic and therapeutic application of roentgen rays.

Diagnostic Roentgenologist.—A roentgenologist who limits his practice to the diagnostic phase of roentgenology.

Therapeutic Roentgenologist.—A roentgenologist who limits his practice to the therapeutic phase of roentgenology.

Radium Specialist.—A physician who has had adequate training and experience in the therapeutic use of radium and who specializes in this work.

3. Scope

A department of radiology should be able to render all of the following services:

(*a*) Roentgenography, simple or stereoscopic, of any part of the body, with medical interpretation of the roentgenographic observations, and under satisfactory conditions for the protection of the patient and of the professional and technical personnel.

(*b*) Roentgenoscopy of any part of the body, in any position, with or without opaque mediums, with medical interpretation of the roentgenoscopic observations, and under satisfactory conditions for the protection of the patient and the professional and technical personnel.

(*c*) Roentgenotherapy of all benign and malignant diseases amenable to such treatment with roentgen rays generated at low, moderate or high voltage (long, medium or short wavelength), as the conditions may require, and under satisfactory conditions for the protection of the patient and of the professional and technical personnel.

(*d*) Radium therapy of all benign and malignant diseases amenable to such treatment with an adequate quantity of radium element or emanation, and under satisfactory conditions for the protection of the patient and of the professional and technical personnel.

Ultraviolet therapy, general or local, with satisfactory air-cooled and water-cooled quartz mercury lamps or carbon arc lamps, with suitable quartz and other applicators for irradiation of cavities, sinuses or the superficial lesions under pressure, and under satisfactory conditions for the protection of the patient and of the professional or technical personnel. This stipulation is not mandatory, but the Council recommends that every department of radiology be equipped for ultraviolet therapy or that the ultraviolet equipment of hospitals be placed in the department of radiology. Ultraviolet treatment by the department of physical therapy shall not be countenanced unless such department is under the control and supervision of a medical director who has specialized in radiology.

A department of roentgenology should be able to render the services specified under *a*, *b* and *c*.

A department of diagnostic roentgenology should be able to render the services specified under *a* and *b*.

A department of therapeutic roentgenology should be able to render the services specified under *c*.

A department of radium therapy should be able to render the services specified in *d*.

4. Housing

The housing should be adequate for the proper functioning of the department of radiology or roentgenology. Damp or ill ventilated quarters are unsuitable for such work.

5. Equipment

The equipment should be sufficient to carry out properly the technical procedures and activities of the department of radiology, roentgenology or radium therapy.

6. Protection

The arrangement of working rooms and conditions, and the construction of all apparatus shall be such as to provide adequate protection, both from electrical shock and from avoidable exposure to roentgen rays or radium, to patients, attendants and other persons in or near the department. The requirements in this respect are based on the recommendations adopted by the International Congress of Radiology, held at Stockholm, Sweden, in July, 1928, and approved by the American Roentgen Ray Society and the Radiological Society of North America.

7. Records

Full records of all examinations and treatments made by the department, suitably indexed, are essential. Roentgenograms made in the department should have inerasible identification marks which will preclude error as to patients concerned. Roentgenograms may be lent to referring physicians but should be returned to the laboratory for filing and future reference. Suitable storage facilities should be provided where roentgenograms and other records will be both safe and readily available for reference. They shall be kept as long as there is the possibility of their being needed for the benefit of the patients or their physicians.

As roentgenography constitutes only a kind of medical examination, on which the roentgenologist's opinion of the patient's condition is partly or wholly based, and as the opinion of the specialist is the essential factor, the Council holds that the introduction of roentgenograms as evidence in medicolegal cases should be discouraged as immaterial and as tending to adulterate the process of justice. There is no more reason for the introduction of roentgenograms than for requiring a pathologist to bring to court his microscope and his sections of tissues.

8. Reports

The reports of a department of radiology, roentgenology or radium therapy shall be made through the director on stationery or blanks having the name of the director printed thereon. Under no circumstances shall roentgenologic diagnoses, interpretations, opinions, statements of prognosis, or therapeutic suggestions be offered by the nonmedical personnel.

9. Library

The department of radiology, roentgenology or radium therapy should be provided with, or have convenient access to, a library including current scientific books and journals on all the various subjects required in its work.

10. Ethics, Fees and Publicity

Radiology is a special type of medical practice, and the physician practicing radiology is subject to the same rules of special training and conduct that govern his fellow specialists in the practice of medicine and surgery. The Principles of Medical Ethics of the American Medical Association shall apply in all cases. The fees charged for radiologic services shall be under the control of the director of the department. All systems of rebates, discounts, special group rates, etc., shall be considered unethical, except that, where the patient's economic status is the determining factor, the radiologist, like his fellow physician in medicine or surgery, may waive part or all of the fee.

The publicity of a department of radiology, roentgenology or radium therapy should be in professional good taste and limited to statements of fact as to name, address and telephone number; names and titles of the director and other active responsible personnel; field of work covered, office hours, directions for referring patients, and so forth. It should not contain misleading statements or claims of unusual superiority. It should not advocate medical fads nor lay undue stress on the importance of roentgenologic observations. On the letterheads or any other form of publicity, only the names of those rendering regular services to the department should appear as being connected with the department. Advertising matter should be directed only to physicians, either through bulletins or through recognized technical journals, and never to the nonprofessional public, as, for example, by announcements in popular journals and periodicals, circulars, pamphlets or telephone lists.

11. Admission to the Approved List

Only when the physician is the director or is affiliated with a department of radiology, roentgenology or radium therapy in which the personnel, space, equipment, management, finances and records are such as will insure honest, efficient and accurate work may he expect to be listed. Physicians desiring to be considered for the approved list should apply to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago.

PHYSICIANS SPECIALIZING IN RADIOLOGY—1,003

The list contains the names of only those who responded to the questionnaire, who have been found to comply with the "Essentials," and who were recommended by the advisers for their respective states. Those who are still under consideration, and others who may apply, will, when accepted, be added in subsequent issues of THE JOURNAL.

The type of service rendered is given opposite the name. "Radiology," under "Type of Service," always includes short wave therapy, also known as "deep therapy." The asterisk (*) on "roentgenology" indicates that short wave therapy is included.

ALABAMA

Name	Address	Type of Service
Anniston		
Levi, Irwin P.	931 Noble St.	Roentgenology
Birmingham		
Barfied-Carter, W. M.	2031, 1st Ave., N.	Roentgenology
Edmonson, John H.	1928, 1st Ave., N.	Roentgenology
Kesmodel, Karl F.	Medical Arts Bldg.	Roentgenology
Meadows, James A.	1928, 1st Ave., N.	Roentgenology
Dothan		
Ellis, John T.	200 E. Main St.	Roentgenology
Montgomery		
Boswell, F. P.	201 Montgomery St.	Radiology

ARIZONA

Name	Address	Type of Service
Phoenix		
Goss, H. L.	125 W. Monroe St.	Roentgenology
Watkins, W. W.	12 N. Central Ave.	Radiology

ARKANSAS

Name	Address	Type of Service
Fort Smith		
Brooksher, W. R.	602 Garrison Ave.	Radiology
Hot Springs		
Nims, Chas. H.	236 Central Ave.	Radiology
Little Rock		
Rhinehart, B. A.	701 Main St.	Roentgenology
Rhinehart, D. A.	701 Main St.	Roentgenology
Zell, A. M.	2000 Main St.	Radiology
Monticello		
Wilson, J. S.		Radiology

CALIFORNIA

Name	Address	Type of Service
Alameda		
Lum, Wm. T.	1361 Park St.	Roentgenology *
Bakersfield		
Fox, L. H.	2025, 18th St.	Roentgenology
Berkeley		
Heald, E. Schulze	3000 Regent St.	Roentgenology
Van Nuys, R. G.	2490 Channing Way	Radiology
Fresno		
Broemser, Milton A.	2014 Tulare St.	Radiology
Milholland, W. G.	Bank of America Bldg.	Roentgenology
Ruff, Frank R.	Burnett Sanitarium	Radiology
Glendale		
Jones, L. L.	229 N. Central Ave.	Roentgenology *
Hollywood		
Sherman, B. H.	6777 Hollywood Blvd.	Roentgenology
Stewart, Chas. W.	1680 N. Vine St.	Roentgenology
Warren, J. W.	1322 N. Vermont Ave.	Radiology
Livermore		
Beaudet, E. A.	Veterans Administration Hospital	Diagnostic roent.
Long Beach		
Heylmun, H. H.	115 Pine Ave.	Diagnostic roent.
Mayfield, Claude	115 Pine Ave.	Diagnostic roent.
Los Angeles		
Bailey, Cornelius O.	727 W. 7th St.	Radiology
Blaine, Edward S.	727 W. 7th St.	Roentgenology
Bonoff, Karl M.	1930 Wilshire Blvd.	Roentgenology
Carter, Ray A.	1100 Mission Rd.	Roentgenology
Costolow, Wm. E.	1407 S. Hope St.	Roentgen therapy Radium therapy
Davis, Kenneth S.	St. Vincent's Hospital	Roentgenology *
Goin, Lowell S.	1930 Wilshire Blvd.	Roentgenology
Karshner, Rolla G.	510 S. Lucas Ave.	Roentgenology
Kibby, Sydney V.	417 S. Hill St.	Roentgenology
Martin, A. T.	209 S. Mariposa St.	Radiology
McKee, Edward N.	2173 Colorado Blvd., Eagle Rock	Roentgenology
Pindell, Merl Lee	678 S. Ferris Ave.	Diagnostic roent.
Snure, Henry	1414 S. Hope St.	Radiology
Soiland, Albert	1507 S. Hope St.	Roentgen therapy Radium therapy
Stafford, Owen R.	520 W. 7th St.	Roentgenology
Taylor, Raymond G.	1212 Shatto St.	Radiology
Witter, Calvin B.	511 S. Bonnie Brae St.	Roentgenology *
Mare Island		
Pinner, Wm. Ellis	U. S. Naval Hospital	Roentgenology
Oakland		
Bissell, F. S.	434, 30th St.	Roentgenology
Bowen, Carl B.	1624 Franklin St.	Roentgenology
Jelte, S. A.	230 Grand Ave.	Radiology
Petch, Philip H.	428, 17th St.	Roentgenology
Peters, Chas. E.	400, 29th St.	Roentgenology *
Sargent, Wm. H.	1624 Franklin St.	Roentgenology *
Siefert, Alfred C.	Samuel Merritt Hospital	Radiology
Palo Alto		
Powers, Robert A.	Medico-Dental Bldg.	Roentgenology
Pasadena		
Parker, Carl H.	65 N. Madison Ave.	Roentgenology *
Pomona		
Swearingen, F. C.	586 N. Main St.	Radiology

NAME	ADDRESS	TYPE OF SERVICE
Redlands		
Folkins, F. H.	47 E. Vine St.	Roentgenology
Riverside		
Thuresson, Paul F.	3770, 12th St.	Diagnostic roent.
Sacramento		
Cook, Orrin S.	1127, 11th St.	Roentgenology
Graham, Ralph S.	Sutter Hospital	Roentgenology •
Zimmerman, Harold	1027, 10th St.	Radiology
San Bernardino		
Owen, C. C.	398, 6th St.	Roentgenology •
San Diego		
Elliott, A. E.	1831, 4th St.	Radiology
Kinney, L. C.	1831, 4th St.	Radiology
Welskotten, W. O.	233 A St.	Diagnostic roent.
San Francisco		
Bryan, Lloyd	450 Sutter St.	Roentgenology •
Crow, Lloyd B.	1400 Fell St.	Roentgenology •
Donovan, Monica	450 Sutter St.	Roentgenology Radium therapy
Fulmer, Chas. C.	St. Luke's Hospital	Roentgenology
Garland, Leo H.	450 Sutter St.	Roentgenology •
Hunsberger, H. S.	450 Sutter St.	Diagnostic roent.
Ingber, I. S.	490 Post St.	Radiology
Newell, Robert R.	2361 Clay St.	Radiology
O'Neill, John R.	2200 Hayes St.	Roentgenology
Rehfisch, John M.	450 Sutter St.	Roentgenology •
Rodenbaugh, F. H.	490 Post St.	Radiology
Ruggles, Howard E.	384 Post St.	Roentgenology
Stone, Robert S.	University of Calif. Hosp.	Roentgenology
Williams, Francis	870 Market St.	Radiology
San Jose		
Richards, Charles M.	241 E. Santa Clara St.	Roentgenology •
San Pedro		
Allen, Albert	410 W. 6th St.	Diagnostic roent.
Santa Barbara		
Geyman, M. J.	1520 Chapala St.	Radiology
Ullmann, H. J.	1520 Chapala St.	Radiology
Ware, James G.	1513 State St.	Roentgenology •
Santa Monica		
Hopkirk, C. C.	710 Wilshire Blvd.	Diagnostic roent.
Stockton		
Sheldon, F. B.	242 N. Sutter St.	Radiology
Woodland		
Lawson, John D.		Radiology

COLORADO

Colorado Springs		
Brown, L. G.	707 N. Cascade Ave.	Radiology
Denver		
Allen, K. D.	227, 16th St.	Roentgenology •
Brandenburg, H. F.	227, 16th St.	Radiology
Childs, S. B.	227, 16th St.	Radiology
Conyers, Chester A.	209, 16th St.	Radiology
Crosby, L. G.	227, 16th St.	Radiology
Diemer, Frederick E.	1612 Tremont St.	Diagnostic roent.
Newcomer, Elizabeth	209, 16th St.	Roentgenology •
Newcomer, N. B.	1616 Tremont St	Radiology
Schmidt, Ernst A.	4200 E. 9th Ave.	Radiology
Stephenson, F. B.	227, 16th St.	Roentgenology
Wasson, W. W.	227, 16th St.	Radiology
Withers, Santord	1612 Tremont St.	Roentgenology Radium therapy
Longmont		
Matlack, J. A.		Diagnostic roent.
Sterling		
Daniel, J. H.		Roentgenology
Woodmen		
Forney, F. A.		Diagnostic roent.

CONNECTICUT

Bridgeport		
Groark, Owen J.	881 Lafayette St.	Diagnostic roent.
LaField, W. A.	144 Golden Hill St.	Radiology
Parmelee, B. M.	144 Golden Hill St.	Radiology
Hartford		
Heublein, Arthur C.	179 Allyn St.	Radiology
Hoffman, Charles C.	700 Main St.	Diagnostic roent.
Ogden, Ralph T.	179 Allyn St.	Radiology
Roberts, Douglas J.	179 Allyn St.	Radiology
Van Strander, W. H.	179 Church St.	Diagnostic roent.
Meriden		
Otis, Fessendon N.	165 W. Main St.	Roentgenology
Middletown		
Murphy, James	101 Broad St.	Diagnostic roent.
New Britain		
Grant, Arthur S.	55 W. Main St.	Roentgenology
New Haven		
Bergman, A. P.	27 Elm St.	Diagnostic roent.
Goldman, George	201 Park St.	Diagnostic roent.
Scott, Clifton R.	215 Whitney Ave.	Roentgenology
Wheatley, Louis F.	420 Temple St.	Radiology
Norwalk		
Perkins, Charles W.	520 West Ave.	Roentgenology •
Willimantic		
Kinney, Kenneth K.	29 North St.	Roentgenology

DELAWARE

Wilmington		
Allen, B. M.	909 Washington St.	Diagnostic roent.
Burns, Ira	601 Delaware Ave.	Diagnostic roent.
McElfatrick, G. C.	1024 W. 8th St.	Diagnostic roent.

DISTRICT OF COLUMBIA

NAME	ADDRESS	TYPE OF SERVICE
Washington		
Caylor, C. C.	1029 Vermont Ave., N.W.	Diagnostic roent.
Christie, A. C.	1835 I St., N.W.	Radiology
Coe, Fred O.	1835 I St., N.W.	Radiology
Elward, Joseph F.	1800 I St., N.W.	Roentgenology
Groover, T. A.	1835 I St., N.W.	Radiology
Lattman, Isidore	1835 I St., N.W.	Radiology
McPeak, Edgar M.	1835 I St., N.W.	Radiology
Merritt, E. A.	1835 I St., N.W.	Radiology
Moore, A. B.	1835 I St., N.W.	Radiology
Moore, Claude	Geo. Washington Univ. Hosp.	Roentgenology
Otell, L. S.	1835 I St., N.W.	Radiology
Sappington, E. F.	1103, 16th St., N.W.	Roentgenology
Spalding, Otis B.	U. S. Naval Hospital	Roentgenology •

FLORIDA

Clearwater		
Brown, Harold O.		Diagnostic roent.
Fort Lauderdale		
Hendricks, E. M.	Sweet Bldg.	Radiology
Jacksonville		
Cunningham, L. W.	117 W. Duval St.	Roentgenology •
McEuen, H. B.	1721 Challen Ave.	Roentgenology •
Shaw, W. McL.	117 W. Duval St.	Roentgenology •
Lakeland		
Weed, Walter A.	Morrell Memorial Hospital.	Roentgenology Radium therapy
Miami		
Cleghorn, Charles D.	168 S.E. 1st Ave.	Roentgenology Radium therapy
Lucinian, Joseph H.	168 S.E. 1st Ave.	Roentgenology •
Raap, Gerard	168 S.E. 1st Ave.	Diagnostic roent. Radium therapy
Miami Beach		
Payton, Frazier J.		Roentgenology Radium therapy
Ocala		
Moore, J. N.		Diagnostic roent.
Orlando		
Pines, John A.	Orlando Clinic.	Roentgenology •
St. Petersburg		
Feaster, O. O.	103, 5th St., S.	Roentgenology Radium therapy
Herring, John A.	350, 3d Ave. N.	Diagnostic roent.
Sanford		
Marshall, C. J.	212 E. 1st St.	Radiology
Tampa		
Allen, Bundy	706 Franklin St.	Roentgenology •
Dickinson, J. C.	706 Franklin St.	Roentgenology •
West Palm Beach		
Herpel, Fredk. K.	Good Samaritan Hospital.	Diagnostic roent.

GEORGIA

Americus		
Pendergrass, R. C.		Roentgenology •
Atlanta		
Clark, James J.	478 Peachtree St., N. E.	Roentgenology
Hall, O. D.	Georgia Baptist Hospital	Radium therapy
Lake, Wm. F.	384 Peachtree St., N. E.	Roentgenology •
Landham, J. W.	139 Forrest Ave., N. E.	Roentgenology Radium therapy
Rayle, Albert A.	Steiner Cancer Clinic	Roentgenology
Stewart, Calvin B.	Steiner Cancer Clinic	Radium therapy
Augusta		
Holmes, L. P.	753 Broad St.	Roentgenology
Savannah		
Cole, Wm. A.	20 E. Taylor St.	Roentgenology
Corson, Eugene B.	10 W. Jones St.	Roentgenology •
Drane, Robert	Liberty and Drayton Sts.	Roentgenology Radium therapy
McGee, H. H.	14 E. Taylor St.	Roentgenology

IDAHO

Boise		
Genoway, Charles V.	105 N. 8th St.	Roentgenology •
Lewiston		
Johnson, Paul W.		Roentgenology •

ILLINOIS

Batavia		
Mostrom, H. T.		Diagnostic roent. Radium therapy
Belvidere		
Alguire, Alden		Diagnostic roent.
Bloomington		
Cantrell, Thomas	310 E. Jefferson St.	Radiology
Grote, Henry W.	219 N. Main St.	Radiology
Chicago		
Arens, Robt. A.	2829 Ellis Ave.	Radiology
Bellin, David S.	411 Garfield Ave.	Radiology
Blackmarr, Frank H.	25 E. Washington St.	Roentgen therapy Radium therapy
Brams, Julius	180 N. Michigan Ave.	Roentgenology
Brown, Wm. L.	55 E. Washington St.	Radium therapy
Casellas, P. R.	1325 E. 53d St.	Roentgenology
Challenger, C. J.	3117 Logan Blvd.	Roentgenology
Cook, Carroll E.	30 N. Michigan Ave.	Radiology
Culpepper, Wm. L.	1305 E. 63d St.	Roentgenology
Cushway, B. C.	7732 S. Halsted St.	Radiology
Cutrera, Peter	501 N. Halsted St.	Diagnostic roent.
Damiani, Joseph	767 Milwaukee Ave.	Roentgenology
Davis, H. E.	2548 Lake View Ave.	Diagnostic roent.
Dick, Paul G.	55 E. Washington St.	Roentgenology

NAME	ADDRESS	TYPE OF SERVICE
Ford, Charles	8017 Luella Ave.	Roentgenology
Gilmore, Wilbur H.	183 N. Wabash Ave.	Roentgenology
Grubbe, Emil H.	6 N. Michigan Ave.	Roentgen therapy
Hartung, Adolph	25 E. Washington St.	Radiology
Hodges, Paul C.	928 E. 59th St.	Radiology
Hubeny, M. J.	25 E. Washington St.	Roentgenology
Jenkinson, David L.	1931 Wilson Ave.	Roentgenology *
Jenkinson, E. L.	1439 S. Michigan Ave.	Radiology
Kraft, Ernest	950 E. 59th St.	Roentgenology *
Landau, George M.	660 Groveland Park	Roentgenology
Larkin, A. James	25 E. Washington St.	Radium therapy
Litschgi, Joseph J.	551 Grant Pl.	Roentgenology
Maier, Roe J.	7752 S. Halsted St.	Radiology
McClure, C. F.	25 E. Washington St.	Roentgenology
Olin, Harry	6058 Drexel Blvd.	Roentgenology
Orndoff, B. H.	2561 N. Clark St.	Roentgenology
Potter, Hollis E.	122 S. Michigan Ave.	Roentgenology
Rose, Cassie Belle	1753 W. Congress St.	Radiology
Royer, Don J.	841 E. 63d St.	Roentgenology
Tichy, L. S.	3200 W. 22d St.	Roentgenology
Trostler, I. S.	25 E. Washington St.	Radiology
Wanninger, W. J.	9116 Exchange Ave.	Roentgenology
Warden, R. H.	1044 N. Francisco Ave.	Radiology
Warfield, C. H.	Cook County Hospital	Roentgenology
Willy, R. G.	2749 W. Foster Ave.	Roentgenology
Danville		
Allison, Otis W.	9 W. Main St.	Radium therapy
Archibald, James S.	602 Green St.	Roentgenology
Dunham, L. H.	139 N. Vermilion St.	Radiology
Deerfield		
Davis, Charles J.		Roentgenology
East St. Louis		
Echternacht, A. C.	129 N. 8th St.	Radiology
Evanston		
Alexander, William G.	636 Church St.	Radiology
Conley, Bernard M.	St. Francis Hospital	Roentgenology
Perry, Gentz	636 Church St.	Radiology
Galesburg		
Gunning, R. E. Lee	64 S. Prairie St.	Radiology
Highland Park		
Jacks, R. R.	16 N. Sheridan Rd.	Diagnostic roent.
Joliet		
Houston, Alfred M.	201 N. Chicago St.	Roentgenology
Mattoon		
Morgan, Chas. E.	213 S. 17th St.	Roentgenology
Mount Carmel		
Elkins, Harold A.		Roentgenology
Mount Vernon		
Smith, Elmer M.	1001½ Broadway	Roentgenology
Oak Park		
Ronayne, Frank J.	West Suburban Hospital	Radiology
Olney		
Weber, James A.		Diagnostic roent. Radium therapy
Ottawa		
Pettit, Roswell T.	Illinois Valley Hospital	Diagnostic roent.
Peoria		
Goodwin, P. B.	530 N. Glen Oak Ave.	Radiology
Magee, H. B.	408 Main St.	Radiology
Quincy		
Beirne, H. P.	648 Hampshire St.	Radiology
Swanberg, Harold	508 Maine St.	Radiology
Rockford		
Ackemann, H. W.	321 W. State St.	Radiology
Springfield		
O'Hara, F. S.	310½ S. 5th St.	Radiology
INDIANA		
Crawfordsville		
Sigmond, H. W.	227 E. Main St.	Radiology
Evansville		
Cleveland, W. R.	22 N. W. 4th St.	Radiology
Meyer, Keith T.	Protestant Deaconess Hosp.	Diagnostic roent.
Smith, Wm. L.	412 S.E. 4th St.	Radiology
Fort Wayne		
Rodriguez, Juan	2902 Fairfield Ave.	Radiology
Steele, M. F.	116 E. Berry St.	Diagnostic roent.
Truelove, A. O.	347 W. Berry St.	Radiology
Van Buskirk, E. M.	347 W. Berry St.	Radiology
Gary		
Dietrich, Paul H.	St. Mary's Mercy Hospital	Roentgenology
Indianapolis		
Beeler, R. C.	23 E. Ohio St.	Radiology
Collins, J. N.	23 E. Ohio St.	Radiology
Lochry, R. L.	St. Vincent's Hospital	Roentgenology
Smith, L. A.	23 E. Ohio St.	Radiology
Stayton, Chester A.	23 E. Ohio St.	Roentgenology *
Kokomo		
Ferry, Paul W.	224 N. Main St.	Diagnostic roent.
LaFayette		
McClelland, D. C.	308 N. 8th St.	Roentgenology *
Michigan City		
Martin, F. V.	501 Pine St.	Radiology
Muncie		
Moore, P. D.	Jackson and High Sts.	Radiology
New Castle		
Iterman, Geo. E.	1319 Church St.	Roentgenology
Plymouth		
Knoff, Harry		Roentgenology
Shelbyville		
Inlow, Herbert H.	2 W. Washington St.	Diagnostic roent.
Terre Haute		
Pierce, H. J.	627 Cherry St.	Radiology
Union City		
Reid, Robert W.		Roentgenology
Valparaiso		
DeWitt, C. H.		Diagnostic roent.
Vincennes		
Moore, Robert G.	21 N. 3d St.	Roentgenology
IOWA		
Anamosa		
Rawson, E. G.		Diagnostic roent.
Atlantic		
Greenleaf, W. S.		Roentgenology
Belle Plaine		
Newland, Don H.		Diagnostic roent.
Cedar Rapids		
Erskine, Arthur W.	120, 3d Ave. S.E.	Radiology
Des Moines		
Burcham, Thos. A.	410, 6th Ave.	Radiology
Dubuque		
Johnston, Wayne A.	1200 Main St.	Radiology
Eagle Grove		
Christensen, John R.		Roentgenology
Independence		
Shellito, J. C.		Roentgenology
Iowa City		
Gibbon, W. H.	University Hospitals	Radiology
Kerr, H. Dabney	University Hospitals	Radiology
LeMars		
Larsen, W. W.		Roentgenology *
Marshalltown		
Talley, Louis F.	Evangelical Deaconess Home and Hospital	Roentgenology
New Hampton		
Chandler, Orville B.		Diagnostic roent.
Ottumwa		
Herrick, John F.	103 S. Market St.	Radiology
Spilman, H. A.	103 S. Market St.	Diagnostic roent.
KANSAS		
Eldorado		
Dinsmore, W. S.	324 W. Central St.	Diagnostic roent.
Ellsworth		
Hissem, H. Z.		Diagnostic roent.
Eureka		
Moore, R. W.		Roentgenology
Fort Scott		
Prichard, J. R.	209 S. Main St.	Radiology
Kansas City		
Allen, Lewis G.	601 Minnesota Ave.	Radiology
Lawrence		
Jones, H. T.	107 E. 8th St.	Diagnostic roent.
Salina		
Brittain, O. R.	105 S. 7th St.	Roentgenology
Topeka		
Finney, Guy A.	901 Kansas Ave.	Roentgenology
Floersch, M. A.	700 Kansas Ave.	Roentgenology
Owen, Arthur K.	901 Kansas Ave.	Roentgenology
Wichita		
Frost, E. J.	227 E. Douglas Ave.	Radiology
Swope, Opie W.	105 N. Main St.	Radiology
KENTUCKY		
Ashland		
Cooper, John Ralph	1540 Winchester Ave.	Roentgenology *
Lexington		
Harding, Donnan B.	190 N. Upper St.	Radiology
Thompson, J. C.	207 N. Upper St.	Roentgenology
Louisville		
Bell, J. C.	332 W. Broadway	Radiology
Enfield, Chas. D.	332 W. Broadway	Radiology
Fugate, I. T.	332 W. Broadway	Radiology
Herrmann, Henry C.	608 S. 4th St.	Radiology
Johnson, S. E.	101 W. Chestnut St.	Roentgenology
Keith, D. Y.	412 W. Chestnut St.	Radiology
Keith, J. P.	412 W. Chestnut St.	Radiology
Owensboro		
Gillim, P. D.	415 St. Ann St.	Roentgenology
Winchester		
Browne, I. H.		Diagnostic roent.
LOUISIANA		
Alexandria		
Barker, H. O.	327, 3d St.	Roentgenology
Baton Rouge		
Williams, Lester J.	221, 3d St.	Radiology
Houma		
St. Martin, T. L.		Roentgenology
Mansfield		
Curtis, H. P. D.		Roentgenology
Monroe		
Moore, Daniel M.	128 De Siard St.	Roentgenology
New Orleans		
Bowie, E. R.	3503 Prytania St.	Radiology
Fortier, L. A.	2000 Tulane Ave.	Radiology
Gately, T. T.	2000 Tulane Ave.	Radiology
Granger, Amedee	921 Canal St.	Roentgenology
Henderson, W. F.	3500 Prytania St.	Radiology
Menville, L. J.	921 Canal St.	Radiology
Samuel, E. C.	3503 Prytania St.	Radiology
Shreveport		
Barrow, S. C.	624 Travis St.	Radiology
Edwards, H. G. F.	624 Travis St.	Roentgenology
Harwell, W. R.	624 Travis St.	Radiology
Rutledge, C. P.	1030 Highland Ave.	Radiology
Thomas, A. Jerome	624 Travis St.	Roentgenology

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MAINE

NAME	ADDRESS	TYPE OF SERVICE
Auburn		
Cunningham, C. H.	66 Goff St.	Diagnostic roent.
Bangor		
Ames, Forrest B.	489 State St.	Roentgenology
Hunt, Barbara	224 State St.	Radiology
Portland		
Cummings, Edson S.	12 Pine St.	Diagnostic roent.
Lamb, Frank W.	131 State St.	Diagnostic roent.
Thaxter, Langdon T.	2 Arsenal St.	Roentgenology
Waterville		
Goodrich, John P.	214 Main St.	Diagnostic roent.

MARYLAND

NAME	ADDRESS	TYPE OF SERVICE
Baltimore		
Ashbury, Howard E.	101 Read St.	Roentgenology *
Baetjer, Fredk. H.	4 E. Madison St.	Roentgenology
Burnam, Curtis F.	1418 Eutaw Pl.	Radiology
Evans, John	101 Read St.	Roentgenology
Feldman, Maurice	2425 Eutaw Pl.	Diagnostic roent.
Kahn, Max	904 N. Charles St.	Roentgenology *
Ostro, Marcus	1810 Eutaw Pl.	Roentgenology
Pierson, J. W.	1107 St. Paul St.	Roentgenology *
Sax, Benjamin J.	101 Read St.	Diagnostic roent.
Walton, Henry J.	104 W. Madison St.	Roentgenology
Waters, Charles A.	1100 N. Charles St.	Roentgenology
Wright, Harold E.	101 Read St.	Diagnostic roent.
Crisfield		
Collins, C. E.		Roentgenology
Cumberland		
Cowherd, F. G.	122 S. Centre St.	Roentgenology
Hagerstown		
Hoffmeier, F. N.	Washington County Hosp.	Roentgenology

MASSACHUSETTS

NAME	ADDRESS	TYPE OF SERVICE
Boston		
Blackett, Chas. W.	35 Bay State Road	Roentgenology
Butler, P. F.	35 Bay State Road	Radiology
Coffin, W. K.	416 Marlboro St.	Roentgenology
Ellsworth, S. W.	520 Beacon St.	Roentgenology
George, Arial W.	43 Bay State Rd.	Roentgenology
Healy, Thomas R.	370 Marlboro St.	Roentgenology *
Holmes, Geo. W.	265 Charles St.	Radiology
Leonard, Ralph D.	43 Bay State Rd.	Roentgenology
Liebman, Charles	311 Commonwealth Ave.	Roentgenology
MacMillan, A. S.	483 Beacon St.	Roentgenology
Martin, William C.	Massachusetts General Hosp.	Roentgenology
McCarthy, H. L.	479 Beacon St.	Roentgenology
O'Brien, Fredk. W.	465 Beacon St.	Radiology
Osgood, Herman A.	144 Commonwealth Ave.	Roentgenology *
Ott, George J.	344 Commonwealth Ave.	Roentgenology
Perkins, Roy S.	520 Commonwealth Ave.	Roentgenology
Ritvo, Max	485 Commonwealth Ave.	Radiology
Robins, Samuel A.	636 Beacon St.	Roentgenology
Sosman, M. C.	Peter Bent Brigham Hosp.	Roentgenology *
Vance, R. G.	264 Beacon St.	Roentgenology
Vogt, E. C.	300 Longwood Ave.	Roentgenology
Watts, Henry F.	6 Monadnock St., Dor.	Diagnostic roent.
Wheatley, Frank E.	520 Beacon St.	Roentgenology
Whelan, Charles	395 Commonwealth Ave.	Radiology
Brockton		
Packard, Loring B.	305 Prospect St.	Roentgenology
Chelsea		
Hutchinson, R. W.	U. S. Naval Hospital	Roentgenology
Dalton		
Sullivan, P. J.		Roentgenology
Fall River		
Lindsey, John H.	151 Rock St.	Roentgenology
Tennis, M. N.	538 Prospect St.	Radiology
Fitchburg		
Jennings, Curtis H.	82 Mechanic St.	Roentgenology
Haverhill		
McFee, William D.	295 Mill St.	Roentgenology
Popoff, Constantine	26 Summer St.	Roentgenology *
Sproull, John	50 Merrimack St.	Radiology
Holyoke		
Harrington, Elmer J.	179 Chestnut St.	Roentgenology *
Lawrence		
Burgess, Charles J.	37 Whitman St.	Radiology
Lowell		
Mehan, Joseph A.	4 Park St.	Roentgenology
Stewart, Ralph C.	226 Central St.	Roentgenology
Malden		
Warren, Alva H.	6 Pleasant St.	Roentgenology
New Bedford		
Bonnar, James M.	90 Hillman St.	Roentgenology
North Adams		
Bunce, James W.	85 Main St.	Roentgenology
Crawford, J. W.	191 E. Main St.	Radiology
Northampton		
Janes, Benjamin F.	211 Elm St.	Roentgenology
Somerville		
Blake, Allen H.	81 College Ave., W. Som.	Roentgenology
Springfield		
Davis, Ernest L.	20 Maple St.	Roentgenology
Horrigan, A. J.	20 Maple St.	Roentgenology
Jackson, Howard L.	146 Chestnut St.	Roentgenology
Powers, Richard T.	25 Maple St.	Diagnostic roent.
Van Allen, Harvey W.	19 Maple St.	Radiology
Webster		
Bragg, Leslie R.	260 Main St.	Diagnostic roent.
Worcester		
Cook, Philip H.	27 Elm St.	Roentgenology Radium therapy
Langill, Morton H.	36 Pleasant St.	Roentgenology

MICHIGAN

NAME	ADDRESS	TYPE OF SERVICE
Adrian		
Chase, A. W.	130 Toledo St.	Diagnostic roent.
Ann Arbor		
Donaldson, Sam W.	St. Joseph's Mercy Hospital	Roentgenology
Hodges, Fred J.	University of Michigan	Roentgenology
Peirce, Carleton B.	University Hospital	Radiology
Battle Creek		
Gorsline, C. S.	Old Merchants Tower	Roentgenology
Kolvoord, Theodore	65 W. Michigan St.	Roentgenology
Upson, W. O.	Leila Y. Post Montgomery Hospital	Roentgenology
Bay City		
Moffatt, Francis J.	Mercy Hospital	Roentgenology
Detroit		
Berris, J. M.	10 Peterboro St.	Diagnostic roent.
Birkelo, Carl C.	28 W. Adams Ave.	Roentgenology
Bloom, Arthur R.	5057 Woodward Ave.	Roentgenology
Chene, George C.	1551 Woodward Ave.	Roentgenology
Dempster, Jas. H.	1551 Woodward Ave.	Diagnostic roent.
Doub, Howard P.	Henry Ford Hospital	Radiology
Evans, Wm. A.	10 Peterboro St.	Radiology
Hasley, Clyde K.	1551 Woodward Ave.	Radiology
Jarre, Hans A.	1551 Woodward Ave.	Radiology
Kenning, J. C.	28 W. Adams Ave.	Roentgenology
Lim, W. K.	2201 E. Jefferson Ave.	Radiology
Loucks, R. E.	337 W. Grand Blvd.	Radiology
Minor, Edward G.	3001 W. Grand Blvd.	Roentgenology
Reynolds, Lawrence	10 Peterboro St.	Radiology
Sanderson, S. E.	5057 Woodward Ave.	Radiology
Shere, O. J.	3001 W. Grand Blvd.	Roentgenology
Stevens, Rollin H.	1551 Woodward Ave.	Radiology
Ulbrich, Henry L.	1122 E. Grand Blvd.	Roentgenology *
Weaver, Clarence E.	113 Martin Pl.	Roentgenology
Flint		
MacDuff, Robert B.	Hurley Hospital	Roentgenology *
Grand Rapids		
Menees, Thomas O.	Blodgett Memorial Hospital	Radiology
Moore, Vernor M.	110 E. Fulton St.	Radiology
Muller, John H.	26 Sheldon Ave.	Radiology
Williams, Alden H.	26 Sheldon Ave.	Radiology
Jackson		
Cooley, R. M.	Mercy Hospital	Roentgenology
Kugler, J. C.	1905 Groveisle Ave.	Roentgenology
Porter, H. W.	1020 E. Michigan Ave.	Radiology
Kalamazoo		
Crane, A. W.	420 S. Rose St.	Roentgenology *
Jackson, John B.	420 S. Rose St.	Roentgenology *
Lansing		
Davenport, Carroll S.	St. Lawrence Hospital	Roentgenology *
Monroe		
Moll, T. M.	120 Maple Blvd.	Diagnostic roent.
Pontiac		
Church, J. E.	35 W. Huron St.	Roentgenology
Pool, H. H.	35 W. Huron St.	Roentgenology
Saginaw		
Anderson, Wm. K.	316 S. Porter St.	Diagnostic roent.
St. Johns		
Ho, T. Y.		Diagnostic roent.
Traverse City		
Minor, E. B.	208½ E. Front St.	Diagnostic roent.
Ypsilanti		
Pillsbury, Chas. B.	23B N. Washington St.	Diagnostic roent.

MINNESOTA

NAME	ADDRESS	TYPE OF SERVICE
Duluth		
Clement, Gage	901 E. 1st St.	Radiology
Mankato		
Wentworth, A. J.	Mankato Clinic	Radiology
Minneapolis		
Allison, R. G.	74 S. 9th St.	Roentgenology *
Fleming, A. S.	900 Nicollet Ave.	Radium therapy
Harrington, Chas. D.	78 S. 9th St.	Radiology
Nordin, G. T.	74 S. 9th St.	Roentgenology *
Rigler, Leo G.	University Hospital	Diagnostic roent.
Sundt, Mathias	2323, 6th St. S.	Roentgenology
Ude, Walter H.	74 S. 9th St.	Roentgenology *
Rochester		
Bowing, Harry H.	102, 2d Ave.	Roentgenology Radium therapy
Camp, John D.	Mayo Clinic	Diagnostic roent.
Desjardins, A. U.	Mayo Clinic	Roentgen therapy Radium therapy
Ford, Frances A.	Mayo Clinic	Radium therapy
Fricke, Robert E.	Mayo Clinic	Radium therapy
Kirklin, B. R.	Mayo Clinic	Diagnostic roent.
Leddy, Eugene T.	Mayo Clinic	Radium therapy
Sutherland, Charles G.	Mayo Clinic	Diagnostic roent.
Weber, Harry M.	Mayo Clinic	Diagnostic roent.
St. Cloud		
Kern, M. J.	St. Mary's Bldg.	Roentgenology *
St. Paul		
Aurelius, J. R.	350 St. Peter St.	Roentgenology *
Schons, Edward	350 St. Peter St.	Radiology

MISSISSIPPI

NAME	ADDRESS	TYPE OF SERVICE
Gulfport		
Sims, Geo. P.	1005, 32d Ave.	Diagnostic roent.
Laurel		
McCormick, H. G.	531, 7th St.	Roentgenology
McComb		
Ratcliff, M. D.	Maryland and 4th Sts.	Diagnostic roent.
Natchez		
Beckman, Marcus	307 Franklin St.	Diagnostic roent.

NAME	ADDRESS	TYPE OF SERVICE
MISSOURI		
Helden		
Thompson, Wm. G.	.....	Radiology
Joplin		
McCaughey, H. D.	607 Main St.	Radiology
Kansas City		
Dann, David S.	304 E. 12th St.	Roentgenology
DeWeese, E. R.	904 Grand Ave.	Roentgenology
Donaldson, C. O.	1103 Grand Ave.	Radiology
Lockwood, Ira H.	304 E. 12th St.	Radiology
McCandless, O. H.	308 E. 12th St.	Roentgenology
McDermott, J. L.	1103 Grand Ave.	Radiology
Skinner, Edward H.	1103 Grand Ave.	Radiology
Virden, C. E.	1103 Grand Ave.	Radiology
St. Joseph		
McGlothlan, A. B.	824 Edmond St.	Roentgenology *
Ravold, Henry J.	401 N. 6th St.	Roentgenology
St. Louis		
Ernst, Edwin C.	3720 Washington Ave.	Radiology
McCutchen, L. G.	508 N. Grand Blvd.	Roentgenology *
Moore, Sherwood	Barnes Hospital	Radiology
Mueller, Wilbur K.	607 N. Grand Blvd.	Roentgenology
Peden, Joseph C.	634 N. Grand Blvd.	Roentgenology
Sante, L. R.	634 N. Grand Blvd.	Radiology
Spinzig, Edgar W.	508 N. Grand Blvd.	Roentgenology
Titterington, P. F.	508 N. Grand Blvd.	Roentgenology
Zink, Oscar C.	St. Luke's Hospital	Roentgenology
Springfield		
Cole, Paul F.	200 Pershing Ave.	Radiology
Webster Groves		
Kerrigan, Joseph A.	421 S. Elm St.	Diagnostic roent.
MONTANA		
Billings		
Bridenbaugh, J. H.	208 N. Broadway	Radiology
Watkins, C. F.	115 N. 28th St.	Radiology
Great Falls		
Walker, Dora	503, 1st Ave. N.	Roentgenology
NEBRASKA		
Beatrice		
Penner, H. G.	113 S. 5th St.	Roentgenology *
Rush, Weaver A.	112½ S. 6th St.	Radiology
Grand Island		
Woodruff, R. C.	306½ N. Locust St.	Roentgenology
Hastings		
Rork, Lee W.	119 N. Hastings Ave.	Roentgenology *
Lincoln		
Kall, Carl	1307 N St.	Roentgenology *
Rowe, Edward W.	128 N. 13th St.	Radiology
Smith, Roscoe L.	1307 N St.	Radiology
Omaha		
Fouts, Roy W.	107 S. 17th St.	Radiology
Hardy, Clyde C.	101 S. 17th St.	Roentgenology
Hunt, Howard B.	Nebraska Methodist Episcopal Hospital	Roentgenology
Kelly, J. F.	107 S. 17th St.	Radiology
Overgaard, A. P.	107 S. 17th St.	Roentgenology
Ross, W. L.	407 S. 16th St.	Roentgenology
Tyler, Albert F.	103 S. 17th St.	Radiology
Scottsbluff		
Plehn, Frank W.	.....	Roentgenology
NEVADA		
Reno		
Piersall, C. E.	120 N. Virginia St.	Radiology
NEW HAMPSHIRE		
Concord		
Eveleth, Fred S.	12 Court St.	Roentgenology
Dover		
Chesley, Harry O.	507 Central Ave.	Roentgenology
Hanover		
Sycamore, Leslie K.	Mary Hitchcock Memorial Hospital	Radiology
Manchester		
Merrill, A. S.	944 Elm St.	Roentgenology
Nashua		
Davis, S. G.	168 Main St.	Roentgenology
Rock, T. F.	77 Main St.	Diagnostic roent.
NEW JERSEY		
Asbury Park		
Herrman, William G.	501 Grand Ave.	Radiology
Atlantic City		
Bradley, Robert A.	1616 Pacific Ave.	Radiology
Kalghn, Charles B.	905 Pacific Ave.	Roentgenology
Camden		
Roberts, Joseph E.	403 Cooper St.	Roentgenology
East Orange		
Marquis, W. James	Homeopathic Hospital of Essex County	Roentgenology
Reitter, George S.	144 Harrison St.	Diagnostic roent.
Elizabeth		
Vogel, Herbert A.	1060 E. Jersey St.	Diagnostic roent.
Ward, Leo J.	137 W. Jersey St.	Radiology
Englewood		
Edwards, James B.	Englewood Hospital	Roentgenology
Flemington		
Tompkins, G. B.	.....	Diagnostic roent.
Hoboken		
Broeser, Henry V.	105 Newark St.	Roentgenology
Jersey City		
Maver, William W.	532 Bergen Ave.	Roentgenology
Perlberg, Harry J.	921 Bergen Ave.	Roentgenology
Montclair		
Schimmelpfennig, R. D.	65 N. Fullerton Ave.	Roentgenology
Stevens, J. Thompson.	55 Park St.	Radiology
Newark		
Baker, Charles F.	198 Clinton Ave.	Roentgenology *
Gelber, Louis J.	41 Lincoln Ave.	Roentgenology
Hood, Philip G.	19 Lincoln Park	Diagnostic roent.
May, Ernest A.	965 Broad St.	Radiology
Reissman, Erwin	31 Lincoln Park	Diagnostic roent.
Passaic		
Terhune, Percy H.	171 Paulison Ave.	Roentgenology
Paterson		
Golding, Harry N.	180 Carroll St.	Roentgenology
Roemer, Jacob	213 Broadway	Radiology
Rochelle Park		
Pallen, C. de S.	.....	Radium therapy
Succasunna		
Plume, C. A.	.....	Diagnostic roent.
Summit		
Tidaback, John D.	382 Springfield Ave.	Roentgenology
Trenton		
Davison, R. Winthrop	200 E. State St.	Radiology
NEW MEXICO		
Albuquerque		
Warden, M. R.	St. Joseph's Hospital	Diagnostic roent.
NEW YORK		
Albany		
Howard, W. P.	46 Willett St.	Roentgenology
Prentice, D. D.	59 Clinton Ave.	Radiology
Amsterdam		
Wilson, David	156 Guy Park Ave.	Roentgenology
Auburn		
Austin, Sedgwick E.	54 E. Genesee St.	Diagnostic roent.
Bull, Harry S.	10 South St.	Roentgenology
Binghamton		
Kann, Ulysses S.	69 Walnut St.	Radiology
Brooklyn		
Bayles, William H.	1901 Bedford Ave.	Diagnostic roent.
Bell, A. L. Loomis	340 Henry St.	Radiology
Cramp, George W.	Methodist Episcopal Hosp.	Diagnostic roent.
Currin, Francis W.	1136 Dean St.	Radiology
Dannenberg, Max	1464 Eastern Parkway	Roentgenology
Eastmond, Charles	483 Washington Ave.	Roentgenology *
Ehrenpreis, B.	576 Eastern Parkway	Roentgenology
Elliott, F. E.	122, 76th St.	Diagnostic roent.
Friedmann, Asa B.	41 Eastern Parkway	Radiology
Gold, Louis	835 Willoughby Ave.	Diagnostic roent.
Goldfarb, L.	608 Ocean Ave.	Diagnostic roent.
Howes, William E.	152 Clinton St.	Roentgenology
Ingraham, Ruth	121 DeKalb Ave.	Diagnostic roent.
Kaufman, Julius	201 Eastern Parkway	Roentgenology
Levine, Isaac	1219, 49th St.	Diagnostic roent.
Liberson, F.	612 Eastern Parkway	Diagnostic roent.
Masterson, John J.	401, 76th St.	Roentgenology
Rendich, Richard A.	116 Remsen St.	Roentgenology
Schenck, Samuel G.	1538 President St.	Diagnostic roent.
Schiff, Charles H.	1000 Park Pl.	Diagnostic roent.
Strahl, Milton I.	255 New York Ave.	Diagnostic roent.
Taormina, Louis J.	1093 Gates Ave.	Roentgenology
Teperson, B. L.	1488 Eastern Parkway	Radiology
Wasch, Milton G.	871 Park Pl.	Radiology
Buffalo		
Barnes, John M.	Millard Fillmore Hospital	Roentgenology
Bayliss, J. W.	472 Delaware Ave.	Diagnostic roent.
DeGraf, Ralph M.	131 Linwood Ave.	Diagnostic roent.
Gian-Francesehi, J. S.	610 Niagara St.	Diagnostic roent.
Helminiak, M. J.	929 Fillmore Ave.	Diagnostic roent.
Koenig, Edward C.	109 High St.	Diagnostic roent.
Lape, C. Pearley	183 Oxford Ave.	Diagnostic roent.
Levy, Sidney H.	33 Allen St.	Diagnostic roent.
Levyn, Lester	40 North St.	Roentgenology
Moses, Chester D.	563 Riley St.	Diagnostic roent.
Orr, Clifford R.	1093 Ellicott St.	Roentgenology *
Schreiner, B. F.	113 High St.	Radiology
Smith, B. B.	333 Linwood Ave.	Diagnostic roent.
Thompson, A. W.	135 Linwood Ave.	Diagnostic roent.
Cooperstown		
Cruttenden, Harry L.	.....	Radiology
Cortland		
Sornberger, Frank F.	16 Church St.	Roentgenology
Elmira		
Bennett, John A.	222 W. Church St.	Roentgenology
Far Rockaway		
Rivkin, Hyman	918 Cornaga Ave.	Diagnostic roent.
Glens Falls		
Birdsall, Edgar	140 Glen St.	Roentgenology
Gloversville		
Denham, H. C.	12 Prospect Ave.	Roentgenology
Hempstead		
Robin, Nathaniel H.	131 Fulton Ave.	Roentgenology
Williams, P. A.	131 Fulton Ave.	Roentgenology *
Hornell		
Mitchell, George W.	208 Main St.	Roentgenology
Hudson		
Harris, Rosslyn P.	427 Warren St.	Diagnostic roent.

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NAME	ADDRESS	TYPE OF SERVICE
Lackawanna		
Cotter, Stephen V.	1457 Abbott Rd.	Roentgenology
Mechanicsville		
Green, Geo. A.		Diagnostic roent.
Mount Kisco		
Vaughan, F. E.		Diagnostic roent.
Newburgh		
Miller, Raymond A.	212 Grand St.	Diagnostic roent.
Reed, Charles B.	203 Liberty St.	Roentgenology
New Rochelle		
Duckworth Willard D.	421 Huguenot St.	Roentgenology
New York City		
Arons, Isidore	30 E. 49th St.	Roentgen therapy Radium therapy
Bendick, Arthur J.	100 E. 94th St.	Radiology
Besser, Herman	66 E. 56th St.	Roentgenology
Carty, John R.	27th St. and 1st Ave.	Roentgenology
Cole, Lewis Gregory	36 E. 61st St.	Roentgenology *
Dieffenbach, W. H.	50 Central Park West	Radiology
Dixon, Geo. S.	218, 2d Ave.	Diagnostic roent.
Ferguson, A. B.	420 E. 59th St.	Roentgenology
Fineman, S.	40 E. 49th St.	Diagnostic roent.
Freid, Jacob R.	1049 Park Ave.	Radiology
Friedman, Lewis J.	315 E. 18th St.	Roentgenology
Glassman, L.	138 E. 36th St.	Diagnostic roent.
Golden, Ross	622 W. 168th St.	Roentgenology
Gottlieb, Charles	210 W. 79th St.	Roentgenology
Groeschel, L. B.	40 W. 72d St.	Radiology
Hirsch, Henry	2075 Grand Concourse	Radiology
Hirsch, I. Seth	136 E. 64th St.	Radiology
Howard, J. Campbell	40 E. 61st St.	Roentgenology *
Imboden, Harry M.	30 W. 59th St.	Radiology
Jaches, Leopold	100 E. 94th St.	Radiology
Kaplan, Ira I.	55 E. 86th St.	Roentgen therapy Radium therapy
Kaplan, Morris	130 Henry St.	Diagnostic roent.
Katz, Harry	141 Broome St.	Diagnostic roent.
Kura, Bernard	1235 Grand Concourse	Diagnostic roent.
Landsman, I. J.	391 E. 149th St.	Diagnostic roent.
Lapman, Charles	2754 Grand Concourse	Diagnostic roent.
Law, Frederick M.	140 E. 54th St.	Diagnostic roent.
Lefrak, Louis	241 E. Broadway	Diagnostic roent.
Lenz, Maurice	1049 Park Ave.	Roentgen therapy Radium therapy
LeWald, L. T.	140 E. 54th St.	Roentgenology
Lewis, Raymond W.	30 E. 40th St.	Diagnostic roent.
Meyer, William Henry	1 University Pl.	Roentgenology *
Philips, Herman B.	9 W. 68th St.	Radiology
Pomeranz, M. M.	911 Park Ave.	Radiology
Powell, C. B.	2368, 7th Ave.	Diagnostic roent.
Quimby, Adonfram J.	5 E. 57th St.	Roentgenology
Remer, John	200 W. 59th St.	Roentgen therapy
Robinson, G. Allen	2 E. 77th St.	Radium therapy
Robinson, William T.	322 W. 72d St.	Roentgenology
Ryan, E. J.	St. Luke's Hospital	Roentgenology
Scholz, Thomas	38 E. 85th St.	Diagnostic roent.
Schwartz, C. W.	33 E. 68th St.	Roentgenology
Schwartz, Irving	1150, 5th Ave.	Diagnostic roent.
Spillman, Ramsay	115 E. 61st St.	Diagnostic roent.
Steiner, Joseph M.	170 East End Ave.	Roentgenology *
Stewart, Wm. H.	222 W. 79th St.	Roentgenology
Taylor, Henry K.	333 West End Ave.	Diagnostic roent.
Unger, Arthur S.	135 E. 74th St.	Roentgenology
Valenti-Mestre, A. F.	129 Broad St.	Roentgenology
Weinberg, Tobias B.	310 E. 15th St.	Roentgenology
Weitzner, Samuel F.	1018 E. 163d St.	Roentgenology
Niagara Falls		
Scott, Walter Roger	598 Pine Ave.	Radiology
Ossining		
Wyser, Dorean D.	Ossining Hospital	Roentgenology
Oswego		
Lavine, Reuben	25 W. Oneida St.	Diagnostic roent.
Wallace, H. M.	140 W. 5th St.	Roentgenology
Peekskill		
Snowden, Fred A.	108 Depew St.	Roentgenology
Port Chester		
West, Theodore S.	324 Westchester Ave.	Radiology
Poughkeepsie		
Davison, Chester O.	Vassar Brothers Hospital	Radiology
Richmond Hill		
Voltz, Albert L.	11520 Myrtle Ave.	Radiology
Rochester		
Almy, Max A.	16 N. Goodman St.	Roentgenology
Davidson, Sol C.	277 Alexander St.	Radiology
Flynn, James M.	277 Alexander St.	Radiology
Green, Joseph H.	277 Alexander St.	Roentgenology
Palmer, Myron B.	277 Alexander St.	Radiology
Sanders, L. J.	213 Alexander St.	Roentgenology
Thomas, Camp C.	476 Lake Ave.	Roentgenology
Saratoga Springs		
King, Earl H.	75 Caroline St.	Roentgenology
Syracuse		
Calliva, Salvatore	510 Prospect Ave.	Diagnostic roent.
Childs, Donald S.	713 E. Genesee St.	Roentgenology
Henry, Lucas S.	116 E. Castle St.	Roentgenology
Potter, Carlton F.	820 S. Crouse Ave.	Roentgenology
Rulison, Foster C.	713 E. Genesee St.	Roentgenology
Troy		
Hull, Thurman A.	505 Broadway	Diagnostic roent.
Utica		
Powers, M. T.	250 Genesee St.	Roentgenology
Watertown		
Pawling, Jesse R.	100 Stone St.	Roentgenology Radium therapy
White Plains		
Duckworth, R. D.	57 Maple Ave.	Roentgenology
Sherman, Herbert	99 Church St.	Roentgenology

NORTH CAROLINA

NAME	ADDRESS	TYPE OF SERVICE
Asheville		
Murphy, G. W.	Flat Iron Bldg.	Roentgenology *
Charlotte		
Lafferty, Robert H.	127 W. 7th St.	Radiology
Phillips, Clyde C.	19 W. 7th St.	Radiology
Durham		
Reeves, R. J.	Duke Hospital	Radiology
Greensboro		
Rhudy, Booker E.	101 N. Elm St.	Roentgenology
Raleigh		
Noble, Robert P.	131 W. Hargett St.	Roentgenology *
Statesville		
McElwee, R. S.	Stearns Bldg.	Roentgenology
Winston-Salem		
Rousseau, J. P.	310 W. 4th St.	Radiology

NORTH DAKOTA

Bismarck		
Berg, Henning Milton	221, 5th St.	Roentgenology *
Fargo		
Rothnem, Thos. Peter	804 Broadway	Roentgenology
Grand Forks		
Woutat, H. G.	318 DeMers Ave.	Roentgenology
Minot		
Gates, Russell	20, 4th Ave. S.W.	Roentgenology *

OHIO

Akron		
Beals, John A.	St. Thomas Hospital	Diagnostic roent.
Selby, John H.	159 S. Main St.	Roentgenology
Stall, A. H.	City Hospital	Radiology
Stewart, J. E.	159 S. Main St.	Roentgenology
Ashtabula		
Collander, P. J.	217 Park Pl.	Roentgenology
Canton		
Peters, Chester M.	709 Cleveland Ave. N.W.	Radiology
Peterson, E. O.	120 Tuscarawas St. W.	Roentgenology *
Shorb, John E.	427 Market Ave. S.	Roentgenology *
Chillicothe		
Holmes, Ralph W.	57 W. Main St.	Roentgenology
Cincinnati		
Bader, E. R.	628 Elm St.	Radiology
Brodberger, Wm. L.	2556 Eastern Ave.	Roentgenology
Brown, Samuel	707 Race St.	Roentgenology *
Doughty, Wm. M.	628 Elm St.	Radiology
Goosmann, Charles	22 W. 7th St.	Radiology
Lange, Sidney	19 Garfield Place	Radiology
Reinecke, Harold G.	Cincinnati General Hospital	Roentgenology *
Warne, B. M.	19 Garfield Place	Roentgenology
Cleveland		
Bettelheim, Frederick	1020 Huron Rd.	Radiology
Farmer, H. L.	10515 Carnegie Ave.	Radiology
Freedman, Edward F.	25 Prospect Ave., N.W.	Roentgenology
Hill, W. C.	10515 Carnegie Ave.	Radiology
LeFevre, Walter I.	9400 Euclid Ave.	Roentgenology
Mahrer, H. A.	10515 Carnegie Ave.	Roentgenology
May, Raymond V.	10515 Carnegie Ave.	Radiology
May, Robert J.	10515 Carnegie Ave.	Radiology
McCoy, Charles C.	Lakeside Hospital	Roentgenology *
McNamee, Edgar P.	25 Prospect Ave., N.W.	Diagnostic roent.
Nichols, R. H.	2050 E. 93d St.	Radiology
Osmond, John D.	10515 Carnegie Ave.	Radiology
Portmann, U. V.	Cleveland Clinic	Roentgen therapy Radium therapy
Steel, David	Lakeside Hospital	Roentgenology
Thomas, M. A.	10515 Carnegie Ave.	Radiology
Columbus		
Bowen, Chas. F.	332 E. State St.	Radiology
Means, Hugh J.	683 E. Broad St.	Radiology
Miller, W. H.	328 E. State St.	Radiology
Reinert, Edward G.	350 E. State St.	Radiology
Riebel, Frank A.	15 W. Goodale St.	Roentgenology
Weirauk, H. V.	9 Buttles Ave.	Roentgenology
Dayton		
Burnett, Harry W.	201 S. Main St.	Radiology
Delscamp, W. H.	201 S. Main St.	Roentgenology
Jones, Lynn M.	117 S. Main St.	Roentgenology *
Fremont		
Philo, D. W.	209 W. State St.	Roentgenology
Gallipolis		
Wilson, Milo		Radiology
Hamilton		
Benzing, George	R.D. 3	Radiology
Lakewood		
McDowell, John R.	15701 Detroit Ave.	Roentgenology
Shetter, North W.	14600 Detroit Ave.	Roentgenology
Lima		
Thomas, Herbert A.	131 N. Elizabeth St.	Radiology
Massillon		
Holston, J. D.	Massillon City Hospital	Diagnostic roent.
Piqua		
Spencer, Robert D.	400 N. Main St.	Roentgenology
Salem		
Heck, Stanton	1160 E. State St.	Roentgenology
Springfield		
Brubaker, E. R.	8 W. Main St.	Radiology
Steubenville		
Miller, J. E.	401 Market St.	Radiology
Toledo		
Kahn, Dalton	237 Michigan St.	Roentgenology
Murphy, John T.	421 Michigan St.	Radiology
Warren		
Gauchat, Paul C.	197 W. Market St.	Roentgenology
Simpson, D. G.	1 Main St.	Roentgenology

NAME	ADDRESS	TYPE OF SERVICE
Youngstown		
Bachman, M. H.	214 N. Phelps St.	Roentgenology *
Heberding, John	151 W. Rayen Ave.	Roentgenology
Heeley, J. A.	Youngstown Clinic	Roentgenology
Meyer, N. N.	23 Central Square	Diagnostic roent.
Zanesville		
Holston, J. G. F.	620 South St.	Roentgenology
OKLAHOMA		
Enid		
Newell, W. B.	502 N. Independence St.	Roentgenology
Marlow		
Talley, C. N.		Diagnostic roent.
McAlester		
Johnston, James C.	216½ E. Choctaw Ave.	Roentgenology
Oklahoma City		
Bradley, John E.	119 N. Broadway	Diagnostic roent.
Myers, Ralph Emerson	1200 N. Walker St.	Radiology
Roland, Marion M.	119 N. Broadway	Radiology
Shawnee		
Hughes, J. E.	14 E. 9th St.	Diagnostic roent. Radium therapy
Sulphur		
Annadown, P. V.		Diagnostic roent.
Tulsa		
Larrabee, W. S.	108 W. 6th St.	Roentgenology
Liberine, Morris B.	108 W. 6th St.	Diagnostic roent.
Stuart, Leon H.	7 W. 6th St.	Roentgenology
OREGON		
Portland		
Dixon, William	193, 11th St.	Diagnostic roent.
Haworth, Wallace	193, 11th St.	Roentgenology
Palmer, Dorwin L.	330 Morrison St.	Radiology
Walker, Ralph C.	564 Washington St.	Radiology
Wight, Otis B.	193, 11th St.	Radium therapy
PENNSYLVANIA		
Allentown		
Smyth, Thos. L.	111 N. 8th St.	Radiology
Troxell, Wm. C.	911 Hamilton St.	Radiology
Altoona		
Alleman, George E.	1416, 12th Ave.	Roentgenology
Bliss, Gerald D.	1220, 13th Ave.	Radiology
Ashland		
Mulligan, P. B.		Roentgenology
Bethlehem		
Leibert, H. F.	338 Wyandotte St.	Roentgenology
Chester		
Egbert, Walter E.	601 E. 13th St.	Roentgenology *
Sharpe, A. Maxwell	708 Sproul St.	Roentgenology *
Clearfield		
Reiley, W. E.		Radiology
Coatesville		
Perkins, J. A.	367 Chestnut St.	Diagnostic roent.
Danville		
Hawley, S. J.		Roentgenology *
DuBois		
Gann, G. W.	79 E. Long Ave.	Roentgenology
McCormick, A. F.	Maple Avenue Hospital	Roentgenology
Easton		
Quiney, James J.	309 Bushkill St.	Radiology
Erie		
Putts, B. Swayne	117 W. 8th St.	Roentgenology
Greensburg		
McMurray, H. A.	107 S. Main St.	Roentgenology
Hanover		
Bortner, C. E.	123 York St.	Diagnostic roent.
Harrisburg		
Ritzman, A. Z.	234 State St.	Roentgenology
Hatboro		
Shoemaker, Robt., 3d.		Roentgenology
Hazleton		
Dessen, Louis A.	4 W. Broad St.	Roentgenology
Huntingdon		
Keichline, John M.		Radiology
Johnstown		
Stewart, H. M.	406 Main St.	Radiology
Kingston		
Howell, G. L.	Kingston Corners Bldg.	Roentgenology
Lancaster		
Davis, Henry B.	550 N. Lime St.	Roentgenology Radium therapy
Snoke, Paul O.	550 N. Lime St.	Roentgenology
Swab, Robert D.	23 E. Walnut St.	Roentgenology
Lebanon		
Boger, John D.	311 Cumberland St.	Diagnostic roent.
Lewistown		
Weaver, O. M.	12 S. Main St.	Roentgenology
Lock Haven		
Green, Geo. D.		Roentgenology
McKeesport		
Snedden, A. R.	522 Walnut St.	Roentgenology
Meadville		
Gingold, Joseph R.	Spencer Hospital	Roentgenology
New Castle		
Cooper, J. R.	111 E. North St.	Radiology
Norristown		
Campbell, Raymond F.	514 Swede St.	Diagnostic roent.
Perkasie		
Strouse, O. H.		Roentgenology

NAME	ADDRESS	TYPE OF SERVICE
Philadelphia		
Barker, Walter C.	Chestnut and 20th Sts.	Radiology
Bird, G. C.	1415 W. Erie St.	Roentgenology
Borzell, Francis F.	4940 Penn St.	Roentgenology
Bowen, David R.	Pennsylvania Hospital	Radiology
Bromer, Ralph S.	Hospital of the Protestant Episcopal Church	Roentgenology
Bruck, Samuel	2104 Pine St.	Roentgenology
Carpenter, Samuel A.	2265 N. 16th St.	Roentgenology
Chamberlain, W. E.	Temple University Hospital	Radiology
Clagett, A. H.	1737 Chestnut St.	Roentgenology
Cohen, Leon Solis	1923 Spruce St.	Roentgenology
Downs, E. E.	Jeannes Hospital	Radiology
Edelken, Louis	1923 Spruce St.	Radiology
Farrell, John T., Jr.	235 S. 15th St.	Roentgenology *
Gershon-Cohen, J.	1832 Spruce St.	Roentgenology
Henry, Robert W.	768 S. 15th St.	Roentgenology
Koenig, Carl F.	1734 Harrison St.	Roentgenology
Manges, Willis F.	235 S. 15th St.	Roentgenology *
Morgan, J. D.	2226 Delancey St.	Radiology
Newcomet, W. S.	3501 Baring St.	Radiology
Pancoast, Henry K.	3400 Spruce St.	Radiology
Pendergrass, Eugene P.	3400 Spruce St.	Radiology
Percival, M. F.	Methodist Episcopal Hosp.	Radiology
Pfahler, George E.	1321 Spruce St.	Radiology
Post, Joseph W.	1930 Chestnut St.	Roentgenology
Rieger, Chas. J. W.	Rahnemann Med. Coll. Hosp.	Roentgenology *
Rosenbaum, George	1521 Spruce St.	Radiology
Schmidt, Wm. Henry	1601 Walnut St.	Radiology
Sender, Arthur C.	1311 W. Allegheny Ave.	Roentgenology
Spackman, E. W.	1824 Chestnut St.	Roentgenology
Stull, H. Tuttle	3300 N. Broad St.	Roentgenology
Vastine, Jacob H.	1321 Spruce St.	Radiology
Widmann, B. P.	250 S. 18th St.	Radiology
Wiley, Louis R.	1512 N. 15th St.	Roentgenology
Zulick, J. Donald	2008 Walnut St.	Roentgenology
Philipsburg		
Benson, Andrew L.		Roentgenology
Pittsburgh		
Alley, Reuben G.	Western Pennsylvania Hospital	Diagnostic roent.
Caldwell, C. S.	520 S. Aiken Ave.	Diagnostic roent.
Fisher, J. W.	500 Penn Ave.	Radiology
Gorfinkell, Julius	3401, 5th Ave.	Roentgenology
Grier, G. W.	500 Penn Ave.	Radiology
Grimm, Homer W.	500 Penn Ave.	Radiology
Johnston, Z. A.	500 Penn Ave.	Roentgenology
McAdams, Edward C.	119 S. Highland Ave.	Roentgenology
McCullough, John F.	500 Penn Ave.	Radiology
Ray, William B.	110 E. Stockton Ave.	Roentgenology *
Robinson, Ralph V.	500 Penn Ave.	Radiology
Schaefer, C. N.	500 Penn Ave.	Radiology
Schumacher, F. L.	500 Penn Ave.	Roentgenology
Reading		
Meter, Edward G.	230 N. 5th St.	Roentgenology *
Travis, Richard C.	219 N. 5th St.	Radiology
Rochester		
McCaskey, F. H.		Roentgenology
Scranton		
Jackson, B. H.	327 N. Washington Ave.	Radiology
Milkman, Louis A.	327 N. Washington Ave.	Roentgenology
von Poswik, Gisela	217 Jefferson Ave.	Roentgenology
Shippensburg		
Stewart, Alexander		Roentgenology
Tamaqua		
Hinkel, William H.	243 E. Broad St.	Roentgenology
Uniontown		
Hess, George H.	104 Morgantown St.	Roentgenology
West Chester		
Pennell, Howard Y.	Chester County Hospital	Roentgenology
Wilkes-Barre		
DesJardins, A.	Wilkes-Barre General Hosp.	Roentgenology *
Rogers, Lewis L.	38 N. Franklin St.	Roentgenology
Wilkinsburg		
McGregor, William J.	901 Wood St.	Roentgenology
Williamsport		
Schneider, Geo. L.	212 Pine St.	Roentgenology
Wursted, L. E.	416 Pine St.	Roentgenology
York		
Bennett, J. H.	1253 W. Market St.	Radiology
Landes, L. S.	454 W. Market St.	Diagnostic roent.
Lutz, J. Fletcher	141 E. Market St.	Roentgenology
RHODE ISLAND		
Newport		
Wheatland, Marcus F.	84 John St.	Diagnostic roent.
Providence		
Albert, Simon	108 Waterman St.	Diagnostic roent.
Batchelder, Philip	188 Waterman St.	Roentgenology
Farrell, John T.	98 Jackson St.	Diagnostic roent.
Gerber, Isaac	201 Waterman St.	Radiology
Kelley, Jacob S.	153 Smith St.	Diagnostic roent.
Woonsocket		
Garrison, Norman S.	38 Hamlet Ave.	Radiology
SOUTH CAROLINA		
Anderson		
Wrenn, Frank	Anderson County Hospital	Radiology
Charleston		
Taft, Robert B.	105 Rutledge St.	Radiology
Columbia		
Pitts, Thomas A.	1515 Marion St.	Radiology
Rodgers, Floyd D.	1117 Hampton St.	Radiology
Florence		
Hay, Percy D., Jr.	111 W. Cheves St.	Radiology
Greenville		
Judy, W. S.	107 E. North St.	Roentgenology
Spartanburg		
Sheridan, William M.	116 W. Main St.	Radiology

SOUTH DAKOTA

NAME	ADDRESS	TYPE OF SERVICE
Aberdeen		
McCarthy, Paul V.	.....	Roentgenology
Pierre		
McLaurin, A. A.	.....	Roentgenology *
Sioux Falls		
Nessa, Nelius J.	301 S. Minnesota Ave.	Roentgenology
Watertown		
Koren, F.	Broadway and Kemp Ave.	Roentgenology *

TENNESSEE

Chattanooga		
Bogart, F. B.	546 McCallie Ave.	Roentgenology
Frere, John Marsh	707 Walnut St.	Roentgenology *
Marchbanks, S. S.	546 McCallie Ave.	Radiology
Johnson City		
Hankins, John L.	300 N. Boone St.	Roentgenology
Peyton, R. L.	Veterans Administr'n Home	Roentgenology
Knoxville		
Abercrombie, Eugene	603 W. Main Ave.	Roentgenology
Casenburg, S. F.	601 Walnut St.	Roentgenology
McCampbell, H. H.	614 Walnut St.	Radiology
Memphis		
Bethea, W. R.	869 Madison Ave.	Roentgenology *
Coley, Steve W.	1265 Union Ave.	Roentgenology *
Heacock, Charles H.	20 S. Dunlap St.	Radiology
Herring, J. H.	995 Madison Ave.	Roentgenology
King, J. Cash	915 Madison Ave.	Roentgenology
Lawrence, W. S.	248 Madison Ave.	Radiology
Paine, Robert	248 Madison Ave.	Radiology
Pulliam, H. N.	617 S. McLean Blvd.	Roentgenology
Robinson, W. W.	1291 Union Ave.	Roentgenology
Nashville		
McClure, C. C.	706 Church St.	Radiology
Shoulders, H. S.	706 Church St.	Roentgenology

TEXAS

Amarillo		
Van Sweringen, Walter	301 Polk St.	Roentgenology
Vaughan, John H.	724 Polk St.	Radiology
Beaumont		
Ledbetter, L. H.	388 Pearl St.	Radiology
White, C. M.	595 Orleans St.	Roentgenology
Corsicana		
Curtis, Richard C.	101 N. Beaton St.	Roentgenology
Dallas		
Beaver, N. B.	1719 Pacific Ave.	Radiology
Martin, Charles L.	1719 Pacific Ave.	Radiology
Martin, J. M.	1719 Pacific Ave.	Radiology
Spangler, Davis	4105 Live Oak St.	Radiology
Eastland		
Caton, J. H.	.....	Roentgenology
El Paso		
Cathcart, J. W.	114 Mills St.	Radiology
Mason, C. H.	114 Mills St.	Radiology
York, M. N.	Bassett Tower	Roentgenology
Fort Worth		
Bond, Tom B.	600 W. 10th St.	Radiology
Hyde, X. R.	600 W. 10th St.	Radiology
Jazoda, S.	1212 North St.	Radiology
O'Bannon, R. P.	1028, 5th Ave.	Radiology
Houston		
Durrance, Fred Y.	1215 Walker Ave.	Diagnostic roent.
Harris, C. P.	1625 Main St.	Roentgenology
McDeed, W. G.	1215 Walker Ave.	Roentgenology *
McHenry, R. K.	1215 Walker Ave.	Roentgenology
Sauermann, Wm. O.	804 Travis St.	Roentgenology
Lubbock		
Smith, Jerome H.	Lubbock Sanitarium and Clinic	Roentgenology Radium therapy
Mineral Wells		
Yeager, Robt. L.	.....	Roentgenology
Orange		
Barr, Richard E.	.....	Radiology
San Antonio		
Barron, Wm. Marshall	705 E. Houston St.	Roentgenology *
Hamilton, W. S.	705 E. Houston St.	Diagnostic roent.
Lowry, R. H., Jr.	Station Hospital, Fort Sam Houston	Roentgenology
Ostendorf, W. A.	507½ E. Houston St.	Roentgenology
Sherman		
Henschen, G. E.	500 N. Highland Ave.	Roentgenology *
Temple		
Giles, Roy G.	Scott and White Clinic	Roentgenology *
Powell, Eugene V.	304 S. 22d St.	Radiology
Wilson, R. T.	Scott and White Clinic	Roentgenology *
Waco		
Jenkins, I. Warner	425 Austin Ave.	Radiology
Wichita Falls		
Wilcox, Clark A.	1300, 8th St.	Roentgenology *

UTAH

Salt Lake City		
Coray, G. B.	54 E. South Temple St.	Roentgenology *
Kerby, James P.	9 Exchange Pl.	Roentgenology

VERMONT

Burlington		
Caldwell, Nathan R.	Mary Fletcher Hospital	Roentgenology *
Robinson, Carl F.	266 Main St.	Roentgenology
Wilson, S. A.	150 Bank St.	Diagnostic roent.

VIRGINIA

Lynchburg		
Spencer, Hunter B.	Allied Arts Bldg.	Radiology
Newport News		
Davis, R. A.	2901 West Ave.	Roentgenology
Norfolk		
Eley, Clayton W.	Hosp. of St. Vincent de Paul	Roentgenology *
Petersburg		
Clarkson, Wright	30 Franklin St.	Radiology
Richmond		
Flanagan, E. L.	116 E. Franklin St.	Roentgenology
Gray, Alfred L.	118 E. Franklin St.	Roentgenology
Hodges, Fred M.	1000 W. Franklin St.	Radiology
Tabb, J. Lloyd	1000 W. Grace St.	Roentgenology *
Talley, B. D., Jr.	501 E. Franklin St.	Roentgenology *
Whitehead, L. J.	501 E. Franklin St.	Roentgenology *
Roanoke		
Armentrout, John F.	30½ Franklin Rd.	Radiology
McKinney, Joseph T.	30½ Franklin Rd.	Roentgenology *
University		
Archer, Vincent W.	.....	Roentgenology

WASHINGTON

Longview		
Hayes, Richard	1267 Commerce Ave.	Roentgenology
Seattle		
Bourns, Frank S.	509 Olive St.	Radiology
Dwyer, Maurice F.	1115 Terry Ave.	Radiology
Garhart, Manch N.	1305, 4th Ave.	Radiology
Holtz, Kenneth J.	920, 2d Ave.	Roentgenology
Koenig, Carl E.	509 Olive St.	Roentgenology
Nichols, H. E.	1215, 4th Ave.	Roentgenology
Snively, J. Howard	509 Olive St.	Roentgenology *
Stephens, Lorenzo L.	1215, 4th Ave.	Radiology
Thompson, H. B.	1305, 4th Ave.	Radiology
Thomson, Curtis H.	1305, 4th Ave.	Roentgenology *
Spokane		
Aspray, Jos.	407 Riverside Ave.	Roentgenology
Betts, Arthur	407 Riverside Ave.	Radiology
Ward, Chas. B.	407 Riverside Ave.	Radiology
Tacoma		
Fishel, C. R.	710 St. Helens Ave.	Roentgenology
McCarty, E. D.	710 St. Helens Ave.	Roentgenology
Walla Walla		
Johannesson, C. J.	1 W. Main St.	Roentgenology
Yakima		
Cornett, Geo. W.	321 E. Yakima Ave.	Roentgenology *

WEST VIRGINIA

Charleston		
Lambert, A. C.	240 Capitol St.	Roentgenology
Fairmont		
Francis, Charles T.	Cook Hospital	Roentgenology
Hollidays-Cove		
Davis, Geo. H.	.....	Diagnostic roent.
Huntington		
MacKenzie, A. R.	855, 4th Ave.	Roentgenology *
Vinson, L. T.	317, 9th St.	Roentgenology
Parkersburg		
Boice, Ralph Homer	717 Ann St.	Roentgenology
Rose, Lonzo O.	510½ Market St.	Radiology
Wheeling		
Rippus, E. S.	77, 16th St.	Roentgenology
Clovis, C. H.	Ohio Valley General Hosp.	Radiology
Kalbfleisch, W. K.	58, 16th St.	Roentgenology
Quimby, Will A.	1401 Market St.	Radiology

WISCONSIN

Appleton		
McGrath, E. F.	114 W. College Ave.	Radiology
Beloit		
Wilson, Russell F.	Beloit Municipal Hospital	Radiology
Eau Claire		
Baird, J. C.	401 S. Barstow St.	Roentgenology
Green Bay		
Olmsted, Austin O.	205 E. Walnut St.	Radiology
Shewalter, G. M.	305 E. Walnut St.	Roentgenology
Troup, R. L.	306 Cherry St.	Roentgenology
Janesville		
Kuegle, F. H.	19 S. Main St.	Roentgenology
Kenosha		
Bowing, Irwin E.	625, 57th St.	Roentgenology
Sokow, Theodore	725, 58th St.	Radiology
LaCrosse		
McLoone, J. E.	319 Main St.	Roentgenology
Madison		
Littig, Lawrence V.	925 Mound St.	Roentgenology
Pohle, E. A.	1300 University Ave.	Radiology
Sisk, J. Newton	16 S. Henry St.	Roentgenology Radium therapy
Marshfield		
Potter, R. P.	.....	Roentgenology
Milwaukee		
Altenhofen, A. R.	152 W. Wisconsin Ave.	Roentgenology
Baumgarten, S.	205 E. Wisconsin Ave.	Roentgenology
Epperson, Paul S.	324 E. Wisconsin Ave.	Roentgenology
Habbe, John Edwin	231 W. Wisconsin Ave.	Roentgenology
Podlasky, Harry B.	536 W. Wisconsin Ave.	Roentgenology
Zmyslony, W. P.	931 W. Mitchell St.	Diagnostic roent.
Neenah		
Greenwood, S. D.	.....	Radiology
Salem		
Fletcher, Wm.	.....	Roentgenology
Superior		
Saunders, Geo.	1501 Tower Ave.	Roentgenology
Waukesha		
Peterson, Geo. E.	831 N. Grand Ave.	Roentgenology

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SATURDAY, MARCH 19, 1932

DEATHS OF PHYSICIANS PUBLISHED IN 1931

During 1931, the deaths of 2,952 physicians of the United States were recorded in THE JOURNAL as compared with 2,943 during 1930 and 2,797 during 1929. The list includes one who died in the Philippine Islands, one in Porto Rico, three in China, two in India and one each in France, South America, Central America, Mexico, Norway and Sweden. The total number published was 3,074, which includes 122 Canadians. In 1931 the obituaries of 84 women physicians were published, as compared with 80 in 1930. Twenty-six Negro physicians died during the year. The graduates of medical schools in the United States for the fiscal year ended June 30, 1931, numbered 4,735. Deducting the number of physicians whose obituaries were published, there was a net addition to the ranks of the profession for the year of 1,783, which, figured thus, is an increase of 161 over 1930.

Ages.—The average age at death of those classified as of the United States was 63.8, as compared with 63.7 for 1930. Two physicians were 99 years old and thirty lived to be 90 or more. One was 23 years old and two were 24. Twenty physicians died between the ages of 25 and 29, 51 died between 30 and 34, 66 between 35 and 39, 86 between 40 and 44, 169 between 45 and 49, 285 between 50 and 54, 360 between 55 and 59, 426 between 60 and 64, 428 between 65 and 69, 420 between 70 and 74, 296 between 75 and 79, 202 between 80 and 84, and 140 at or above 85. March was the month of most deaths, with 292.

Accidental Deaths.—There were 139 physicians who died as a result of accidents in 1931, compared with 130 in the previous year. Automobile accidents accounted for seventy-one, five more than in 1930. In 1931, deaths from falls numbered twenty-two, the second largest number among those due to accidental causes. Eleven deaths were caused by drowning, seven by airplane accidents, six by gunshot wounds, three each by illuminating gas and carbon monoxide, and two from overdoses of medicine. The remaining accidental deaths resulted from the following causes; burns, phosphorus, carbon tetrachloride and alcoholic poisoning, earthquake, explosion, anesthetic, cut by glass, head caught in drawer of wardrobe trunk, collision of horse and buggy with train, burns from x-ray machine, crushed by automatic elevator, baked in electric cabinet, cut while shaving, collapse of concrete pillar, and street car accident.

Suicides and Homicides.—Sixty-four physicians committed suicide in 1931, two less than in 1930. The method most frequently employed was shooting, which accounted for thirty-four deaths. Poison was used in five cases, hanging in four, incised wounds four, drugs and gas three each, carbolic acid, drowning, anesthesia and strangulation one each, and in the remaining cases the method was not reported. There were nine homicides caused by shooting and one by stabbing.

Causes of Deaths.—Heart disease was again the leading cause of death, with 1,065 deaths compared with 1,059 for 1930. Some contributory causes are included in the tabulation, as they have been in former years. A report that the cause of death was "chronic nephritis and heart disease," for example, is so published in THE JOURNAL and is reported on the statistical charts under both diseases. Of the deaths from heart disease, endocarditis or myocarditis was specified in 342, angina pectoris in 114 and pericarditis in 7. Cerebral hemorrhage was the second most frequent cause reported, with 365 deaths; 25 additional deaths were reported as due to paralysis. Pneumonia was the third most frequent cause; lobar pneumonia was reported in 254 cases and bronchopneumonia in 58. Fourth on the list was arteriosclerosis, with 252 deaths. Nephritis caused 237 deaths, of which 18 were specified as acute nephritis. Of the 236 deaths caused by cancer, the stomach and liver were affected in 63 cases, the intestine in 29, the prostate gland in 24, the buccal cavity in 12, and in 108 the part affected was not specified. Embolism and thrombosis caused 104 deaths; uremia, 80; tuberculosis, 65; diabetes mellitus, 64; septicemia, 45; appendicitis and typhlitis, 43; intestinal obstruction, 22, and other diseases of the digestive system, 38; diseases of the prostate, 40, and other diseases of the genito-urinary system, 25; influenza, 36, and other diseases of the respiratory system, 40; senility, 36; cirrhosis of the liver, 26; hypertension, 24; peritonitis, 23; ulcer of the stomach, 21, and other diseases of the stomach, 6. Conditions that caused a few deaths each are as follows: cholecystitis, 18; pernicious anemia, and diseases of the bones and organs of locomotion, 16 each; encephalitis, 15; biliary calculi and gangrene, 14 each; leukemia, 13; meningitis and sarcoma, 11 each; chronic bronchitis and asthma, 9 each; erysipelas, 8; dementia paralytica, 8; other diseases of the nervous system, 7; diseases of the liver, agranulocytic angina and paralysis agitans, 6 each; carbuncle and diseases of the veins, 5

each; diseases of the circulatory system, pleurisy, acute articular rheumatism and aneurysm, 4 each; alcoholism, hernia, Hodgkin's disease, sinusitis and agranulocytosis, 3 each; tetanus, tumors, shock, heat prostration, septic sore throat, diseases of the spinal cord and diseases of the artery, 2 each. The following list of causes was given for one case each: general diseases, locomotor ataxia, diseases of organs of hearing, diseases of skin or cellular system, scarlet fever, pancreatitis, chorea, anthrax, hemorrhagic purpura, Banti's disease, psittacosis, lymphosarcoma, splenic anemia, insanity, hiccups, Friedreich's ataxia, pellagra, episiotomy, brain abscess, sunstroke, undulant fever, encephalomalacia, adenoma of the pituitary gland, adenoma of the prostate, epilepsy, poliomyelitis, acute abscess, secondary anemia, hypernephroma and brain tumor.

Positions.—Among the decedents were 159 who were or had been teachers in medical schools, 223 who served in the World War, 56 veterans of the Civil War and 42 veterans of the Spanish-American War. Eighty-two had been health officers; 81, members of boards of education, and 70, members of boards of health. There were 46 coroners, 43 mayors of municipalities, 42 members of state legislatures, 14 members of the state boards of medical examiners, 14 members of the U. S. Army Medical Corps and 9 of the U. S. Naval Medical Corps. Twenty-five authors, 20 bank presidents, 16 druggists, 11 members of city councils, 9 editors, 7 missionaries, 6 postmasters, 4 dentists, 4 justices of the peace, 2 lawyers, 1 clergyman, and 1 police surgeon were also included.

Association Officers.—The obituaries published in 1931 of former officers of the American Medical Association included two vice presidents, two trustees, fifteen members of the House of Delegates, ten section officers and one member of a council. Thirty-five presidents of state societies died during the year, and five secretaries.

"FREE" AND "BOUND" WATER IN COMPENSATION FOR LOSS OF BLOOD

A survey of the composition of body fluids and tissues emphasizes the large relative proportion accounted for by water. The digestive fluids contain only about 1 per cent of total solids; even bladder bile, after the usual desiccation, is four-fifths water. Of the skeletal muscle, only 25 per cent is solids; even fresh bone will lose two fifths of its weight when heated to constant weight. The enamel of the teeth, the hardest tissue of the body, contains 5 per cent of water. In spite of the ubiquitous distribution of water, it is safe to say that pure water does not exist as such in the organism. In it are dissolved a great variety of substances, ranging from typical inorganic crystalloids such as sodium chloride at one extreme to colloidal solutes such as the proteins at the other. When a piece of tissue is rapidly frozen at a low temperature and an estimate made of the quantity of water present in the form of ice, it is usually found that this amount of moisture is less than that determined by heating to constant weight. Observations of this nature have led to the conclusion that part of the water in tissues and body fluids is "free," whereas the rest is "bound" more tenaciously to the colloids either in solution or in contact with it and is therefore more difficult to release.

The appreciation of the physical importance of fluid volume in maintaining physiologic equilibriums has prompted an examination of the relative parts played by "free" and "bound" water in certain pathologic conditions. In a recent investigation, Robinson and Parsons [1] followed the changes in water content of blood and muscle under various experimental conditions analogous to shock. After a moderately severe hemorrhage the usually observed compensation for loss of volume occurs by a passage of water from the tissues, especially the muscles, to the blood. The replacement of erythrocytes and hemoglobin is delayed for a considerable time. While both the total and the "free" water of the blood was augmented, the restoration of the plasma volume was largely due to increase in "free" water; the muscles lost both "free" and "bound" water, though in one experiment the compensation for lost blood was made principally at the expense of the "free" water of the muscle. After trauma to an extremity there was a shift in water. Moderate injury caused a decrease in "free" water in the blood with little change in "bound" water; if the trauma was severe enough to produce hemorrhage there was the typical posthemorrhagic dilution of the blood caused largely by increase in the "free" water, accompanied by a loss of free water from the uninjured muscles. After the injection of histamine, the blood became more concentrated as the result of a loss of "free" water and the muscle gained water at about the same rate. In one experimental animal, a spontaneous fall of blood pressure occurred with a decrease in water of the blood and a concomitant gain in muscle water. In both instances the changes were accounted for entirely by the shift in "free" water.

Extensive studies by Blalock and his co-workers [2] have demonstrated that the fall in blood pressure following trauma in the viscera, injury to the extremities and severe burns can be accounted for in large part by the passage of water from the blood to the injured areas. The observations of Robinson and Parsons show not only that uninjured tissue gives up water to the blood under such circumstances but also that this readily available fluid arises principally from the "free" water component of the muscle. The cooperation of uninjured tissue in restoring fluid volume to the blood after extensive hemorrhage either to the outside or

1. Robinson, William; and Parsons, Eloise: Hemorrhage and "Shock" in Traumatized Limbs, Arch. Path. **12**: 869 (Dec.) 1931.

2. Blalock, Alfred: Experimental Shock, Arch. Surg. **22**: 598-610 (April) 1931. Beard, J. W., and Blalock, Alfred: Ibid., p. 617. Johnson, G. S., and Blalock, Alfred: Ibid., p. 626. Harris, P. N., and Blalock, Alfred: Ibid., p. 638.

into damaged tissue is a striking example of compensation in the organism. The studies have shown the notable mobility of part of the tissue water; on the other hand, water bound to protoplasmic colloids or concerned in the maintenance of essential physicochemical equilibriums involving colloidal solutes tends to be more stable and less responsive to the emergency demands of the organism as a whole.

ABSORPTION THROUGH SINUS MUCOSA

Although the fundamental reactions and activities of all living cells are essentially alike, the mechanisms devised by nature to suit the exigencies of differentiation are varied. With the multiplication of cells constituting the organism the simple devices for digestion, absorption and respiration which satisfied the single-celled individual have been modified not so much in character as in allocation to specialized tissues. Differentiation has resulted in localization of these functions. Some of the most interesting of these adaptations center about the gastro-intestinal tract and its natural diverticula. In the mouth, stomach and intestine food is changed by chemical and mechanical means to soluble forms. But in this state of transformation it is still outside the body. Fundamentally, therefore, the phenomenon of absorption is of utmost importance in the life of the organism. In the gastro-intestinal tract proper this function is most highly developed in the small and large intestine, neither the mouth and esophagus nor the stomach being seriously considered as absorptive organs for the usual food materials in the light of the best experimental evidence. The epithelium in the lungs is extraordinarily efficient in allowing the passage of respiratory gases and it has been shown that the mucous membrane of the mouth also permits the diffusion of these gases.[1] There are occasions when it is desired to use drugs in certain of the evaginations of the alimentary canal specifically for their local influence; under these conditions the possibility of absorption into the systemic circulation becomes of considerable importance.

An investigation of the absorption from sinus mucosa has recently been reported by Childrey and Essex.[2] Various drugs and toxins were introduced into the frontal sinus of experimental animals under general anesthesia and absorption was detected by observing either the blood pressure or the appearance of the appropriate material in blood and urine depending on the substance used. The effect produced by subcutaneous or intravenous injections of the substance served as a check on the absorption through the sinus mucosa. Five times the dose of histamine giving a distinct depressor response after intravenous and subcutaneous administration gave negative results when injected into the nasal cavity and into the sinus. Four times the effective subcutaneous dose of nicotine failed to induce a positive reaction on the blood pressure when given in the sinus. Negative results were likewise recorded after injections of ephedrine and of epinephrine into the frontal sinus. Rattlesnake venom (crotalin) was then used, the criterion of its appearance in the circulation being a fall in blood pressure and an increase in red cell volume after subcutaneous injection. When this substance was placed in the frontal sinus, the blood pressure change was insignificant though there did occur a swelling of the erythrocytes. Phenolsulphonphthalein injected into the nasal mucosa showed a markedly delayed absorption and excretion compared to that after subcutaneous injection. The absorption from an infected sinus, however, was prompt though of abnormally long duration.

It is apparent that absorption of drugs and certain therapeutic agents from the nasal sinus and nasal cavity either does not occur or exhibits a low degree of efficiency. This is in marked contrast to some of the typical absorbing membranes elsewhere in the body. The experimental evidence leads to the conclusion that highly toxic substances may be used in the treatment of sinus disease without great danger of absorption. Again the slow absorption through sinus mucosa even when inflammatory changes have occurred permits the conclusion that bacterial toxins from infected sinuses are likewise absorbed with difficulty. Presumably these results are to be associated primarily with normal intact mucous membrane. Controlled observations with infected and inflamed mucous membranes should be made with a variety of substances and of bacterial agencies.

1. Henderson, Yandell; and Stehle, R. L.: Gas Tensions in the Tissues of the Mouth, J. Biol. Chem. **38**: 67 (May) 1919.
2. Childrey, J. H., and Essex, H. E.: Absorption from the Mucosa of the Frontal Sinus, Arch. Otolaryng. **14**: 564 (Nov.) 1931.

Current Comment

LOSS OF WEIGHT IN THE NEW-BORN

The characteristic loss of weight of infants soon after birth—a process extending over a period of days—has been the subject of much discussion and not a little clinical investigation by pediatricians. Those who contend that the characteristic phenomenon is "nature's way" and need not give the physician any undue concern argue that the alimentary tract of the new-born infant remains unable for some days to perform the essential digestive functions; hence it should be spared. Attempts to feed the infant in some special way during the period of weight loss have as a rule not been satisfactory. Mere loss of weight is not a formidable condition when one recalls the normal powers of recuperation that usually follow such recessions. But the relative inanition often brings about other consequences which later in life would certainly be considered pathologic. Thus there may be an "inanition temperature" during the period of greatest loss in weight—usually on the third or fourth day following birth. This has been ascribed to dehydration and lack of food. Icterus neonatorum also sometimes is an

unwelcomed symptom. "Acidosis" often seems to be established. On this account Eder and Bakewell [1] of the Santa Barbara Clinic in California began the routine use of a carbohydrate (lactose) and a potential alkali (sodium citrate) in a large series of new-born infants. The California pediatricians announce that the addition of 5 grains of sodium citrate to each 2 ounces of 5 per cent lactose solution given to new-born infants during the first few days of life appears to be of value in decreasing the initial postnatal loss in weight. The average loss in 100 consecutive infants was 5.3 ounces, or 150 Gm. In comparison with untreated infants, weight at birth is regained earlier; 83 per cent had again reached their original weights on or before the fourteenth day. Only three infants had inanition temperature. The general condition of the infants as shown by activity, ability to nurse, color and absence of icterus neonatorum was far better than that of infants who had lactose solution without sodium citrate. Larger experience should indicate whether the proposed treatment is really worth while.

THE FAMILY PHYSICIAN AND THE TRUST OFFICER

In the administration of estates, problems develop that cannot be solved by bankers alone or by an order of the probate court. That the administrator may manage an estate to the best interest of the family of the deceased, the trust officer must have knowledge of each member of the family. Mr. John H. Boushall [1] of the First National Bank of Tampa, Fla., suggests that the trust officer will find the necessary cooperation through the family physician. No one other than the family physician can know better the lives and the physical set up of each member of the family. In the administration of an estate, the trust officer first has to consider the widow, who has been plunged into business affairs through the death of her husband and, at the same time, brought to the verge of prostration. With the guidance of the family physician who knows her family, the trust officer will secure her confidence and cooperation. Some of the children may have peculiarities that will give the trust officer more trouble than any other feature of his administration. Such children may insist on being humored or receiving special consideration or special allowances, all of which will tax the trust officer's patience as well as the funds of the estate. To the physician who has seen the children grow up, such peculiarities are no cause of alarm. His advice and the child's understanding that the physician knows him add weight to the trust officer's decisions. When an influential friend of the family suggests that one of the children should take a trip hither and yon in search of better health, the family physician will know that what is really needed is an adjustment of personal habits to a more sensible mode of living. A friend may suggest to the trust officer, furthermore, that the neurotic child should be placed under the care of some noted and probably distant medical expert, and that might prove to be more expensive than the estate could afford. Again, it can be shown to the trust officer that such treatment may be unnecessary, for the family physician is able to understand and to evaluate the opinions and methods of specialists. The patient in this case also will know that the family physician knows the truth. Through the entire administration of the estate, Mr. Boushall suggests, decisions affecting the well being of the widow and children can be happily worked out through cooperation of the trust officer and the family physician, between whom there naturally will be a spirit of mutual respect and understanding.

1. Eder, H. L., and Bakewell, Benjamin: Effect of Sodium Citrate on the Loss of Weight in the New-Born Infant, Am. J. Dis. Child. 42: 1079 (Nov.) 1931.

1. Boushall, J. H.: Doctors and Trust Officers, Am. Bankers A. J., January, 1932, p. 437.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday from 12 noon to 12:05 p. m. over Station WBBM (770 kilocycles, or 389.4 meters) and other stations of the Columbia Broadcasting System, and on Wednesday and Friday from 2:25 to 2:30 p. m. over Station WBBM, Chicago.

The program for the week is as follows:

March 21. Cancer Among Women.
March 23. Fifty Years Later.
March 25. Too Many Children Spoil the Foster House.

There is also a fifteen minute health talk sponsored by the Association on Saturday from 11:15 to 11:30 a. m., over Station WBBM, Chicago.

The program for the week is as follows:

March 26. The Sign on Your House (concluded).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

State Board of Health Reorganized.—Drs. Junius B. Harris, Sacramento, and Gifford L. Sobey, Paso Robles, were recently appointed members of the California Department of Public Health to succeed Drs. Robert A. Peers, Colfax, and Fred F. Gundrum, Sacramento, whose terms expired. Drs. Peers and Gundrum have served continuously as members of the board since 1915. In the reorganization of the board, Dr. John H. Graves, San Francisco, succeeded Dr. George E. Ebright as president, and Dr. Edward M. Pallette, Los Angeles, became vice president. Dr. Ebright will continue as a member. Other members of the board, in addition to those mentioned, are Drs. William R. P. Clark, San Francisco, and Giles S. Porter, Los Angeles, who is director of the department. Dr. Harris is president of the California Medical Association.

Society News.—Dr. Henry D. Chapin, Bronxville, N. Y., gave a lecture at Stanford University School of Medicine, San Francisco, March 4, on "Social Aspects of Child Welfare."——Dr. John C. Meakins, Montreal, Que., Canada, addressed the San Francisco County Medical Society, March 15, on "Treatment of Cardiac Irregularities."——An annual midwinter course in otolaryngology was instituted in Los Angeles, January 15; the guest lecturers for the first course included Drs. Georges Portmann, Bordeaux, France; Edmund P. Fowler, New York, and Harry L. Baum, Denver.——The Northern California Public Health Association, at its annual meeting in San Francisco, January 30, elected Dr. Thomas A. Storey, Stanford University, president, and Dr. Herbert F. True, city health officer, Sacramento, president-elect. Other officers were

Dr. Wilfred H. Kellogg, Berkeley, vice president; Dr. Walter H. Brown, Palo Alto, secretary, and Miss Mary E. Davis of the state department of public health, treasurer.——Dr. George Piness, Los Angeles, addressed the San Diego County Medical Society, March 8, on "Practical Application of Allergy in General Medicine."

Rules for Adoption of Children.—In an effort to avoid irregular methods used by superintendents of some maternity hospitals in the separation of infants from their mothers for adoption, the state board of health announces that the new adoption law requires:

1. That relinquishment for adoption must be signed by father or mother before subscribing witnesses and acknowledged before the agent of an organization licensed by the state department of social welfare.

2. A certified copy of the above relinquishment must be filed with the state department of social welfare, 111 State Building, San Francisco, within twenty-four hours.

3. Persons desiring to adopt a child may petition the superior court of the county in which they reside. Consent for adoption is required in all cases, except (*a*) in cases of adoption by step-parent in which one natural parent retains custody and control of child, and (*b*) in cases in which one of the agencies mentioned by the board joins in the petition for adoption.

The consent for adoption must be signed in the presence of an agent of the state department of social welfare on a form prescribed by that department.

COLORADO

Annual Clinics.—The University of Colorado School of Medicine and Hospitals will hold its annual clinics, March 23-25. The program calls for special teaching and diagnostic clinics in general surgery, pediatrics, otolaryngology, general medicine, urology, proctology, dermatology, tuberculosis, neurology, obstetrics and gynecology, orthopedics, ophthalmology and psychiatry. Dr. Leonard G. Rowntree, Rochester, Minn., will be the guest speaker, Thursday evening, March 24; his subject will be "Blood Pressure States."

Society News.—Dr. Maurice H. Rees, Denver, was elected president of the Denver Public Health Council, January 12; Dr. Estella F. Warner, Washington, D. C., addressed the meeting on "Child Welfare in Colorado."——Dr. Gerald B. Webb, Colorado Springs, addressed the El Paso County Medical Society, February 10, on "The Prescription of Literature."——The Mesa County Medical Society was addressed, February 16, by Dr. Frank J. McDonough on "Modern Treatment of Burns with Special Reference to Tannic Acid"; Dr. Elliott S. Stong, Grand Junction, "Management of War Hospitals and War Surgery," and Mr. Robert Whipple, "Filtrability of Bacteria."——Among others, Dr. Gerrit Heusinkveld, Denver, addressed the Otero County Medical Society, February 11, in La Junta, on "Management of Difficult Labor."

CONNECTICUT

Dr. Maher Awarded Medal.—Dr. Stephen J. Maher, New Haven, was awarded the Lactare Medal by the University of Notre Dame, South Bend, Ind., March 6. Dr. Maher, who is 71 years old, is the forty-ninth recipient of the award, the New York *Times* states. He graduated from Yale University School of Medicine, and, since 1900, has been actively engaged in the study of tuberculosis. He has been chairman of the Connecticut tuberculosis commission since 1913 and was at one time president of the New England Conference on Tuberculosis.

Change in Wassermann Technic.—The bureau of laboratories, Connecticut State Department of Health, discontinued the use of the plain alcoholic antigen as a routine part of the Wassermann test, February 1, because the plain alcoholic antigen was found less sensitive than the cholesterinized alcoholic antigen in the regular routine, and because research undertaken by the laboratories in 1931 to determine the most practical serologic procedure for its purposes definitely confirmed the routine observations. This problem comprised the serologic examinations of 3,000 specimens by each of five different tests. Furthermore, it was felt that the change would give the laboratory the opportunity to satisfy the demand for an extension of the use of the Kahn precipitation test in conjunction with the Wassermann test.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-three cities with a total population of 36 million, for the week ended March 5, indicate that the highest mortality rate (25.5) appears for Wilmington, and the rate for the group of cities as a whole, 13.4. The mortality rate for Wilmington for the corresponding period last year was 18.6, and for the group of cities, 13.8. The annual rate for eighty-three cities for the nine weeks of 1932 was 12.3, as against a rate of 14.3 for the corresponding period of last year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have large Negro populations, may tend to increase the death rate.

FLORIDA

Society News.—Dr. Charles W. Stiles, Washington, D. C., addressed the Orange County Medical Society, January 20, on eradication of hookworm disease.——A symposium on the value of the Mantoux tuberculin reaction in the diagnosis of the childhood type of tuberculosis was presented before a recent meeting of the Columbia County Medical Society by Drs. Louie M. Limbaugh, Thomas M. Palmer and Wilfred M. Shaw, Jacksonville.

GEORGIA

Another "Doctor" Sentenced.—"Dr." Randall Boyd Ramsey is now serving a two year sentence in the U. S. penitentiary Annex, Fort Leavenworth, Kan., for violation of the Harrison Narcotic Act. At Macon, Ramsey procured morphine on forged internal revenue forms stolen from Dr. Henry A. Vann, Boston, Ga. Prior to this time, it is reported, he had been convicted of a violation of the Harrison Narcotic Act at Jacksonville, Fla., and fined $500. On another occasion, he was convicted and fined $50 for a similar violation. Ramsey himself is said to be an addict. He claims to be a practicing physician, stating, it is said, that he received his degree of doctor of medicine from the University of Louisville, Ky., about 1890, and that he practiced in Tennessee and Georgia. Correspondence indicates, however, that the dean of the University of Louisville School of Medicine was unable to find any record that Ramsey ever attended that school. The secretaries of the Tennessee, Georgia, Kentucky and Florida state medical boards have also reported that Ramsey's name does not appear in their records. There is no record in the files of the American Medical Association that this man was ever graduated from a medical school or licensed to practice medicine.

Fischer Prizes Awarded.—Dr. Frank Lee Bivings, Atlanta, was awarded the 1931 L. C. Fischer Prize for research for a paper on "Eczema in Infancy and Childhood—Its Relation to Allergy," and Dr. Mark Stovall Dougherty, Jr., Atlanta, the prize for the best written paper, "Toxic Reactions Produced by the Derivatives of Barbituric Acid." In 1925 Dr. Luther C. Fischer, to stimulate interest in research and to improve medical writing, established the L. C. Fischer prizes to be awarded through the Fulton County Medical Society. Two prizes of $100 each have been available every year. Winners of the awards in previous years are: 1925, both prizes by Dr. Madison Hines Roberts, Atlanta, "Spinal Fluid in the New-Born with Special Reference to Intracranial Hemorrhage"; 1926, both prizes, Dr. Daniel C. Elkin, "Postoperative Atelectasis of the Lung"; 1927, prize for research by Dr. Roberts, "Relations of Pigment Content in the Serum and Spinal Fluid of New-Born Infants"; 1928, no paper considered worthy of either award; 1929, Dr. Launcelot Minor Blackford, for best written paper on "Tetralogy of Fallot"; 1930, Dr. Jack C. Norris, Decatur, prize for research, "A Yeast Pathogenic for Man and Animals (Saccharomyces Pleomorphus-Virulens)," and Dr. John B. Cross, "Fatal Hepatogenic Hypoglycemia Following Neoarsphenamine."

ILLINOIS

Society News.—Dr. Leon Unger, Chicago, addressed the Iroquois County Medical Society at Watseka, February 25, on "Recent Advances in the Treatment of Asthma and Hay Fever."——Dr. Andrew J. Boston, Albion, was elected president of the newly reorganized Edwards County Medical Association, and Dr. Herman L. Schaefer, West Salem, secretary.——Dr. Ellis Fischel, St. Louis, addressed the St. Clair County Medical Society at Belleville, March 2, on "Use of Radium in Malignancy." Dr. Frank J. Tainter, St. Louis, addressed the society, March 3, in East St. Louis on "Problems of Thyroid Surgery."——Dr. William W. Graves, St. Louis, addressed the Madison County Medical Society, March 4, at Alton on "Practical Basis in the Diagnosis of Neurologic Conditions."

Increase in Rabies.—A sharp increase in the prevalence of rabies among dogs has been observed by the state department of public health during the last two months. Positive tests for rabies were made of thirty-nine animal heads, mostly dogs,

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in the laboratories of the department during January and February of this year, compared with nineteen for the corresponding month of 1931, an increase of more than 100 per cent. There were 197 positive tests made in the laboratories during 1931. Distribution centered in Cook County, Sangamon County and in Jefferson County in a way that almost duplicated the 1926 experience, which marked the beginning of an epidemic wave that reached a peak in 1928, when 1,471 positive tests were made and fourteen human deaths from rabies were recorded.

Chicago

Personal.—The Medical Women's Club of Chicago gave a dinner, February 10, in honor of Dr. Bertha Van Hoosen, head of the department of obstetrics in Loyola University Medical School.

Naprapath Sentenced.—Olive Kendall Harvey, naprapath, was sentenced to one year in the county jail and fined $200 and costs, February 24, for violation of the medical practice act. Among various complaints to the state department of registration are charges that the woman has performed abortions. She has never had a license of any kind in this state, the department reports. In 1927 she was fined $100 on a charge of practicing medicine without a license (THE JOURNAL, July 16, 1927, p. 212).

Society News.—At the meeting of the Chicago Gynecological Society, March 18, the speakers were Drs. Pashupati J. Sarma and George De Tarnowsky on ovarian embryoma and Gustav Kolischer, urologic conditions in women.——At a recent meeting Dr. Robert B. Preble was elected president of the Chicago Heart Association and Dr. Sidney Strauss, secretary.——The Chicago Neurological Society was addressed, March 17, among others, by Dr. William F. Lorenz, Madison, Wis., on "Confessions Obtained During Narcosis."——Dr. Leo L. Mayer, among others, addressed the Chicago Ophthalmological Society, March 21, on "Visual Fields, Blind Spots and the Optic Disks in Endocrine Diseases."——The Chicago Society of Allergy will be addressed, March 21, by Drs. Paul R. Cannon and William L. Beecher on "Studies in Tissue Immunity" and "Allergy as a Factor in Ulcers of the Digestive Tract," respectively.

INDIANA

Society News.—Dr. Homer G. Hamer, Indianapolis, addressed the Grant County Medical Society at Marion, February 23, on "Palliative Treatment of Prostatism."——The Fountain-Warren County Medical Society was addressed at Covington, March 3, by Dr. Edward B. Ruschli, La Fayette, on "Diagnosis and Care of Toxic Goiter."——At the March 2 meeting of the Marshall County Medical Society, Dr. Paul R. Irey, Plymouth, spoke on "Treatment of Gonorrhea in Male and Female."

IOWA

Personal.—Dr. Finis C. Suggett, Columbia, Mo., became director of the Des Moines County Health Unit, effective February 1. He succeeded Dr. Carl F. Jordan, who will return to the University of Iowa as assistant professor of hygiene and preventive medicine, it is reported.

Society News.—The Carroll County Medical Society was addressed, January 7, by Drs. Aldis A. Johnson, Council Bluffs, and John C. Parsons, Creston, on "Diagnosis and Treatment of Parasitic Diseases of the Intestinal Tract" and "Mistakes in Diagnosis," respectively.——The Des Moines Academy of Medicine and the Polk County Medical Society were addressed, February 23, by Drs. Francis A. Ely and Elmer E. Kottke on "Acute Infective Polyneuritis" and "Heart Sounds and Their Clinical Significance," respectively.——Dr. Philip B. McLaughlin, Sioux City, was elected president of the Sioux Valley Medical Association at its annual meeting recently, and Dr. William Roscoe Jepson, Sioux City, secretary.

LOUISIANA

Society News.—A symposium on diphtheria immunization comprised the program of the Orleans Parish Medical Society at its meeting, February 22. The speakers were Drs. William H. Robin, Robert A. Strong and John A. Signorelli, New Orleans. Drs. Noka B. Hon, New Orleans, and Ralph L. Lawrence, Washington, D. C., among others, addressed the society at its clinical meeting at the U. S. Marine Hospital, New Orleans, March 14, on "Diathermy in Treatment of Paresis" and "Results in the Treatment of Pernicious Anemia," respectively.——Dr. John H. Musser, New Orleans, addressed the East West Feliciana Bi-Parish Medical Society in Jackson, February 3, on "Some Facts About Nutrition."

MAINE

Society News.—Dr. Joseph W. Scannell, Lewiston, addressed the Androscoggin County Medical Society at Lewiston, February 5, on "The Acute Abdomen."——The Cumberland County Medical Society heard a talk on "Pasteurization of Milk," given by Dr. Milton J. Rosenau, Boston, January 29.——At the meeting of the Penobscot County Medical Society, February 16, Dr. Ernest M. Daland, Boston, spoke on "Accepted Methods in the Treatment of Cancer."

MARYLAND

Diphtheria Immunization Campaign.—With the endorsement by the Baltimore City Medical Society and the Colored City Medical Society, the city health department has begun a campaign for diphtheria immunization in Baltimore. An effort is being made during March and April to have as many parents as possible take their children to their private physicians for the treatments. Later, clinics will be held to care for those who are unable to afford a physician for the service. Certificates of immunization and circulars for the use of physicians in their practice are now being printed for distribution, April 1.

Increase in Venereal Disease Clinic Attendance.—During 1931 there were 57,043 visits made to the three Baltimore venereal disease dispensaries for examination, treatment and advice. This was an increase of 16,521 over the preceding year. Treatment for syphilis given to white patients numbered 6,832 and to Negroes, 29,487. Gonorrhea treatments totaled 4,539 for white patients and 12,060 for Negroes. There were 128 chancroid treatments given to white patients and 2,870 to Negroes; 2,339 more Wassermann tests were made than during the preceding year. According to the director of the bureau of communicable diseases of Baltimore, this increase is partly explained by present economic conditions. The city clinics are the only clinics where treatment is free and which are open at night.

Dr. Dochez to Give Thayer Lectures.—Dr. Alphonse R. Dochez, professor of medicine, Columbia University College of Physicians and Surgeons, New York, will give the fifth course of lectures under the William Sydney Thayer and Susan Read Thayer Lectureship in clinical medicine at Johns Hopkins Hospital, March 22-23. Dr. Dochez will speak on "A Limited Consideration of Certain Aspects of Acute Infection of the Respiratory Tract." May 16, 1927, a group of friends and admirers of Dr. William Sydney Thayer donated a fund to Johns Hopkins University to endow a lectureship to be known as "The William Sydney Thayer and Susan Read Thayer Lectureship in Clinical Medicine." According to the terms of the gift, the income of this fund is to be used to defray the expenses of one or more annual lectures on subjects in clinical medicine, pediatrics, neurology or borderline branches.

Quarter Century Editions of Medical Annals.—Dr. John Ruhräh, Baltimore, has been appointed by the Medical and Chirurgical Faculty of Maryland to prepare the history of the medical profession in the state for the last twenty-five years. In 1927, Dr. Thomas S. Cullen, in his presidential address, spoke on "Early Medicine in Maryland." Recalling Dr. Eugene Fauntleroy Cordell's book on the "Medical Annals of Maryland," he suggested that the state's medical history be brought up to date. It was decided then, the faculty's bulletin states, that this should be done, if possible, in quarter century editions. The work is now well under way, and divisions have been made covering the growth and development of Maryland's hospitals and medical schools as well as the administration of city and state departments of health. Dr. Ruhräh, as editor of this new history, is being assisted by many collaborators covering the various branches of medicine.

MASSACHUSETTS

License Restored.—The license to practice medicine in Massachusetts of Dr. Irving F. Armstrong, Hudson, was restored to him, March 3. Dr. Armstrong's license had been revoked for conviction on a charge of conspiracy in connection with claims for personal injury in automobile accident insurance cases, the state board of registration reports.

New Administrative Plan.—With the adoption of a new plan of administrative organization the Massachusetts Institute of Technology, March 9, is subdivided into five departments —the School of Science, School of Engineering; School of Architecture, Division of Humanities and the Division of Industrial Cooperation. The School of Science includes biology and public health, chemistry, geology, general science, mathematics and physics. The three schools are the departments in which degrees are given, whereas the two divisions are

essentially service divisions, the New York *Times* states. The study of hygiene will be included in the Division of Humanities. The new organization provides for an administrative council, an informal body which will meet weekly for reports of progress in the various departments.

MICHIGAN

Society News.—Dr. George B. Eusterman, Rochester, Minn., addressed the Wayne County Medical Society, Detroit, March 15, on "Incidence and Nature of Gastric Lesions Masquerading as Benign Disease."——Dr. Adolph E. Voegelin, Detroit, recently delivered four lectures on cardiology at the Evangelical Deaconess Hospital.

Examination of Children for Tuberculosis.—An antituberculosis campaign is being carried on in Wayne County during March and April, by representatives of the Wayne County Medical Society, health departments of the county, the Detroit Roentgen Ray Society and the Detroit Tuberculosis Society. Letters are being sent to parents of children in grade and high schools asking them to have each child examined for tuberculosis by the family physician, who will record his observations on a record card enclosed with the letter. Those who do not have a private physician are to be referred to a cooperating physician in their districts. Positive reactors will be carefully examined and a brief history will be taken with particular reference to contacts, all information to be recorded on special forms. They will then be referred for roentgen examination. Roentgenologists have agreed to accept each physician's statement as to the ability of the parent to pay for the service. Parents unable to pay even a part of the cost may be sent to the Herman Kiefer Hospital, where the roentgen examination will be made without charge and a report sent to the referring physician. No charge will be made by physicians if the parents are unable to pay. A charge of one dollar will be made if the child comes to the physician's office for the tuberculin test and the physical examination during the hours specified for the purpose. This arrangement interferes in no way with charging a regular fee for this examination when it is conducted at other hours or on adults and contacts. Tuberculin, forms for recording histories and physical observations, lists of cooperating roentgenologists and technical instruction are to be supplied by the Detroit Department of Health. Contacts are to be followed up and referred to either the family or the cooperating physician.

MINNESOTA

University News.—Dr. Hilding Berglund has resigned as professor of medicine at the University of Minnesota Medical School, Minneapolis, effective June 30, 1933. He will spend the year beginning July 1, 1932, in absentia. Jesse F. McClendon, Ph.D., professor of physiologic chemistry at the university, was to have left about the middle of March to spend a year as visiting professor under the Rockefeller Foundation at the Tohoku Imperial University, Sendai, Japan.

Society News.—At the meeting of the Minnesota Radiological Society in Minneapolis, February 13, the addresses included "Recent Literature on the Classification and Treatment of Bone Tumors" by Dr. William A. O'Brien, and "Cholecystographic Studies on the Emptying of the Human Gallbladder," by Edward A. Boyden, Ph.D.—The Minnesota Academy of Medicine was addressed, March 9, by Drs. Clayton K. Williams, St. Paul, on "Nonspecific Protein Therapy"; William F. Braasch, Rochester, "Recurring Renal Lithiasis of Unusual Type," and Emil S. Geist, Minneapolis, "Knee Fusion."

MISSOURI

Hospital News.—An endowment of $250,000 has been given to St. Luke's Hospital, Kansas City, by Mrs. Herbert F. Hall. The income will be used to pay part or all of the hospital expenses in selected cases, to relieve in part or entirely the burden of the expense of illness which requires hospital care for families with a budget of from $2,000 to $3,000. An operating room at the hospital was recently dedicated to the memory of Dr. Herbert G. Trueman who died in 1928. The room was given to the hospital by Mrs. Trueman.

Medical School Committee Appointed.—Dr. Albert J. Welch, Kansas City, president of the Jackson County Medical Society, recently appointed a committee to act in the interest of procuring for Kansas City the last two years of medical instruction for students at the University of Missouri. The committee includes Drs. Edwin Lee Miller, Buford G. Hamilton, Minford A. Hanna, Jabez N. Jackson and Edward P. Heller. In 1930 the reestablishment of the clinical years at the University of Missouri, Columbia, was authorized. They had been discontinued in 1909 (THE JOURNAL, Oct. 18, 1930, p. 1185).

Society News.—Dr. Hugh Cabot, Rochester, Minn., among others assisting in the hospital clinic of the Kansas City Southwest Clinical Society, March 8, spoke on "The Management of Cancer of the Prostate." He also addressed the Jackson County Medical Society in the evening on "Place of Nephrostomy in the Treatment of Kidney Lesions." Drs. Nelse F. Ockerblad and Ernest G. Mark spoke on "Correction of Vesical Neck Obstructions by Means of the Resectoscope" and "An Attempt to Evaluate Transurethral Prostatectomy in Bladder Neck Obstructions," respectively.——At the meeting of the St. Louis Medical Society, February 23, Dr. Horace W. Soper spoke on "Diagnosis of Carcinoma of Colon," and Dr. John W. Thompson, Jr., talked on "Surgical Treatment of Carcinoma of Colon with Report of Forty-Five Cases." The society was addressed, February 16, by Drs. Lawrence Schlenker on "Pneumothorax as a Home Treatment"; Wilbur K. Mueller, "Spontaneous Pneumothorax," and Edgar W. Spinzig, "Massive Collapse (Atelectasis) of the Lung." Clinical cases were presented at the meeting of the St. Louis society, March 1. A brief summary of the life of the late Dr. Theodore F. Prewitt was also read at this meeting, as a centennial tribute. Dr. John C. Meakins, Montreal, Canada, addressed the society, March 8, on "Bronchial Carcinoma."——At the meeting of the Jackson County Medical Society, March 15, the speakers were Drs. David S. Dann, Kansas City, on "X-Ray Examination of the Spine"; Frank D. Dickson, Kansas City, "Shelf Operation for the Correction of Congenital Hip Disease," and Samuel A. Grantham, Joplin, "Spinal Fusion by the Tunneling Method."

NEW YORK

Report on Workmen's Compensation Laws.—A committee appointed by Governor Roosevelt to review problems connected with workmen's compensation insurance, has presented a report of its studies during the year. The subcommittee on hospital problems, of which Dr. Sigismund S. Goldwater is chairman, made the following recommendations: that hospitals be adequately paid for service in compensation cases without regard to the "ward charity" rate; that authorization by the employer for payment of hospital charges should not be required; that a law be enacted giving a hospital liens on judgments awarded to patients in damage suits, and that hospitals be advised within a definite time whether cases are to be contested. The subcommittee on medical problems, of which Dr. Adrian V. S. Lambert is chairman, recommended that all occupational diseases be included in the provisions of the workmen's compensation act; that insurance company physicians be excluded from physical examinations of claimants; that the practice of "lifting" (defined as the practice on the part of insurance agents of inducing compensation claimants to change medical attendants by means of threats or offers of a pecuniary nature) be prohibited, under penalty of forfeiture to the state of a sum ranging from $50 to $150. The committee on medical problems further expressed the opinion that the maintenance of clinics by insurance companies is unsatisfactory and suggested that a series of clinics be created under supervision and direction of the state. Two members representing insurance companies dissented from the foregoing opinion. The committee also recommended that total disability be interpreted to mean that the injured person is unable to return to his occupation and should be compensated until he can resume it, with the exception that any earnings from light work in the meantime be deducted from compensation. Although present conditions are unsatisfactory, they do not warrant free choice of physicians by patients, the committee believed. Finally, the committee suggested the formation of a "supreme court of review" made up of seventy-five unbiased experts from which committees could be drawn to solve certain highly specialized medical problems. A third committee on departmental procedure, headed by Mr. Max Meyer, recommended, among other things, creation of a bureau to which a claimant might go for impartial checkup on his treatment; provision of suitable examination rooms in every city and recognition of the principle that a man injured while working should not become a burden to society because his employer is not insured. Suggested bills to be submitted to the legislature were presented to the governor covering (1) elimination of authorization by employers, (2) the right of hospitals to adequate remuneration and (3) elimination of right of carriers or employees to be represented at physical examinations of injured persons. Howard S. Cullman, New York, is chairman of the governor's committee.

New York City

Study of Incipient Tuberculosis in Children.—The Queensboro Tuberculosis and Health Association is directing a three-year study of tuberculosis in 22,000 school children of the borough of Queens, it was recently announced. Roentgenograms are being made of all the children's chests and it is planned to repeat the examination next year and the next, thus making available three consecutive films for each child. The board of education, the city health department, Bellevue Hospital, Nassau County Hospital and the medical department of the New York Telephone Company are cooperating in the study, according to the report.

Hospital News.—A new $125,000 hospital building at Mitchell Field, L. I., was occupied, February 20, replacing an old structure. It has a capacity of twenty-five beds and a specially equipped optical room for eye examinations of pilots. ——The Veterans Administration Hospital in the Bronx is in process of conversion from a hospital for nervous and mental patients to a general hospital. Neuropsychiatric patients have been transferred to hospitals at Northport, L. I., and Reliance, N. J. Because of an increase in the number of patients requiring general treatment, it was found necessary to make provision for them in New York City. Such cases have heretofore been cared for at the naval hospital in Brooklyn.

Milbank Fund Council Meeting.—At a meeting of the advisory council of the Milbank Memorial Fund, March 16-17, Dr. William H. Welch, Baltimore, resigned as chairman of the council, a position he had held since its organization in 1922. Dr. Livingston Farrand, Ithaca, was chosen to succeed him. The council met in groups, in which discussions were held on health centers, health education and tuberculosis in children, population studies and public health nursing. Among speakers were Drs. William H. Park, Shirley W. Wynne and James Alexander Miller, New York; Thomas Parran, Jr., Albany, and Raymond Pearl, Ph.D., Baltimore. Dr. Hsun-Yuan Yao described the fund's health demonstration in Ting Hsien, China (THE JOURNAL, Sept. 5, 1931, p. 714). Discussions on economics of medicine and health were presented by the following speakers, among others: Dr. Ray Lyman Wilbur, Washington, D. C.; Louis I. Dublin, Ph.D., New York, and Charles-Edward A. Winslow, Dr.P.H., New Haven, Conn.

OHIO

Graduate Course in Physiology.—Dr. Anton J. Carlson, professor of physiology, University of Chicago, will conduct the tenth annual graduate course sponsored by the Toledo Academy of Medicine, March 21-25, on recent advances in physiology. Dr. Carlson will give two lectures each day, covering, among other subjects, the anemias, control of the heart, control of blood pressure, oxygen therapy, the digestive secretions, motor mechanisms of the alimentary tract, dietary deficiencies, the endocrine glands and renal function.

Society News.—Drs. Cyrus C. Sturgis, Ann Arbor, Mich., and Marion A. Blankenhorn, Cleveland, addressed the Cleveland Academy of Medicine, March 18, on "The Outlook of the Patient with Pernicious Anemia" and "Neurological Aspects of Pernicious Anemia," respectively.——The Cleveland Neurological Society was organized, February 4, with Dr. Siegfried Baumoel as chairman and Dr. William James Gardner as secretary.——Dr. Henry D. Chadwick, Detroit, addressed a joint meeting of the medical section of the Toledo Academy of Medicine and the Toledo Public Health Association, March 18, on "The Childhood Type of Tuberculosis." This meeting celebrated the fiftieth anniversary of Koch's discovery of the tubercle bacillus, March 24, 1882.

PENNSYLVANIA

Governor Vetoes Hospital Bill.—Governor Pinchot recently vetoed a $2,000,000 hospital aid bill passed by the special session of the legislature. The governor said he could not approve the measure because it did not provide revenue for the appropriation and because in his opinion the basis of distribution had no relation to the requirements of the individual hospitals. The bill apportioned the fund among the state's hospitals on the basis of 27 per cent of the 1931 appropriation.

Society News.—Dr. William W. G. MacLachlan, Pittsburgh, addressed the Mercer County Medical Society, February 17, on pneumonia.——Dr. Adam C. Williamson, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, March 3, on "Management of Occiput Positions."——Speakers at the meeting of the Pittsburgh Academy of Medicine, March 8, were Drs. Charles H. Henninger, on "Borderline Mental States"; David Silver, "Bone Setting and Allied Cults," and Andrew Wallhauser, "Treatment of Hodgkin's Disease."——At a meeting of the Cambria County Medical Society, Johnstown, March 10, Dr. Frederick M. Allen, Morristown, N. J., spoke on "Diet and Other Measures in Treatment of Nephritis" and Drs. Bernard J. McCloskey, Joseph P. Replogle and John W. Barr presented a review of research and study in medicine, surgery and dermatology, respectively.——John J. Moffitt, D.D.S., addressed the Harrisburg Academy of Medicine, February 16, on "The Problem of the Abscessed Tooth."

Philadelphia

Hospital News.—The Jeanes Hospital instituted a radium service recently with the completion of an emanation plant and the purchase of 1 Gm. of radium. Another gram of radium is on order and will be delivered shortly, according to the medical director.——The merger of the West Philadelphia Hospital for Women with the Woman's Hospital of Philadelphia, announced in 1928, was consummated, February 16, when the personnel of the former institution was moved to the new $530,000 building of the latter in West Philadelphia.

Founder's Day Celebration.—The one hundred and eleventh anniversary of the founding of the Philadelphia College of Pharmacy and Science was celebrated, February 23. C. Leonard O'Connell, Pharm.D., of the University of Pittsburgh College of Pharmacy, made an address on education of the pharmacist. H. K. Mulford presented to the college the fifth of a series of mural paintings depicting the progress of pharmacy. The honorary degree of master of pharmacy, honoris causa, was conferred on Dr. O'Connell.

Hospital Deficits.—Private hospitals in Philadelphia incurred a deficit in 1931 of $726,440, it was revealed at a meeting of the subscribers to the Welfare Federation, February 29. Dr. J. Norman Henry, director of public health, stated that public hospitals are overcrowded; the Philadelphia Hospital for Mental Diseases, for example, has 5,100 patients, when it is equipped to care for only about 3,000. In pleas for further aid for private hospitals, it was pointed out that large numbers of persons who were formerly pay or part-pay patients are now forced to become charity patients.

Society News.—Dr. Rosco G. Leland, Chicago, will address the Philadelphia County Medical Society, March 23, on "Trends in Medical Economics" and Dr. George P. Muller, on "The Public and the Medical Profession."——The meeting of the Philadelphia Neurological Society, March 18, was dedicated to the memory of Dr. Charles K. Mills, one of the founders. The following speakers discussed various phases of the career of Dr. Mills and his relation to the society: Drs. William G. Spiller, Charles W. Burr, James W. McConnell, Williams B. Cadwalader, Charles H. Frazier, Theodore H. Weisenburg and James Hendrie Lloyd.——Dr. John Alexander, Ann Arbor, Mich., gave a lecture, March 18, under the auspices of the D. Hayes Agnew Surgical Society, on "The Widening Scope of Thoracic Surgery."

TENNESSEE

Society News.—Dr. John Howard King addressed the Nashville Academy of Medicine, February 23, on acne. Dr. Thomas A. Mitchell spoke, March 1, on "Symptoms Due to Impairment of Kidney Function and Acidosis," and Dr. Fred W. Rankin, Rochester, Minn., March 8, on "Encouragement in Dealing with Colonic Malignancies."——Dr. Harold M. Bowcock, Atlanta, Ga., addressed the Hamilton County Medical Society, Chattanooga, February 11, on "Newer Considerations in the Treatment of Diabetes Mellitus." Drs. Stewart Lawwill and James D. L. McPheeters, Chattanooga, spoke, February 18, on sinus diseases.——Drs. Samuel T. Ross and Edwin A. Sayers, Nashville, among others, addressed the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, January 26, on "Surgical Treatment of Cirrhosis of the Liver with Ascites" and "Diagnosis and Treatment of Fractures of the Skull," respectively.——Dr. James A. Price, Memphis, was elected president of the Tennessee Tuberculosis Association at the recent annual meeting in Nashville.——Drs. Richard A. Barr and Jefferson C. Pennington, Nashville, addressed the Giles County Medical Society, Pulaski, January 28, on appendicitis and surgery of the neck of the bladder, respectively.——Drs. Morton J. Tendler and Thomas D. Moore, Memphis, addressed the Memphis and Shelby County Medical Society, January 19, on "Pilonidal Sinus" and "Instrumental Correction of Prostatic Obstruction," respectively.——Dr. H. C. Long addressed the Knox County Medical Society, Knoxville, March 1, on cardiac arrhythmia. Dr. Philip C. Thomas, Knoxville, addressed the society, March 8, on "Placenta Praevia."

TEXAS

Spring Clinical Conference.—The fourth annual spring clinical conference sponsored by the Dallas Southern Clinical Society will be held, March 28-April 2, in Dallas, with headquarters at the Baker Hotel. There will be addresses by guest speakers each morning and evening and round table luncheons each day at noon, while the afternoons will be devoted to clinics at various hospitals and to a series of graduate lectures. At the opening meeting, March 28, Dr. Edward H. Cary, Dallas, President-Elect, American Medical Association, will make an address of welcome and the following physicians will speak: Drs. Thomas R. Brown, Baltimore, on "The Story of Digestion—and Indigestion"; Frank H. Lahey, Boston, "The Thyroid Gland," and Karl A. Menninger, Topeka, Kan., "Suicide: Its Meaning and Its Prevention." Among other guest speakers listed for the week are Drs. Herman L. Kretschmer, Chicago, "Treatment of Pyelitis"; Samuel A. Levine, Boston, "Bedside Recognition of Irregularities of the Heart"; Merrill C. Sosman, Boston, "Roentgenological Observations on the Cure of Gastric and Duodenal Ulcers"; Williams McKim Marriott, St. Louis, "Practical Points in the Care and Feeding of Infants"; Lee Wallace Dean, St. Louis, "Relationship Between Infections of the Upper Respiratory Tract and Pediatric Conditions"; Udo J. Wile, Ann Arbor, Mich., "Skin Manifestations of Systemic Disease"; John Shelton Horsley, Richmond, Va., "Diagnosis and Treatment of Cancer of the Colon"; William O'Neill Sherman, Pittsburgh, "Surgery of Trauma"; Carl A. Hedblom, Chicago, "Treatment of Empyema"; Paul Titus, Pittsburgh, "Toxemias of Pregnancy"; Edward H. Richardson, Baltimore, "Interpretation of Abnormal Uterine Bleeding"; John A. Kolmer, Philadelphia, "Present Status of Vaccine and Nonspecific Protein Therapy"; Joseph C. Beck, Chicago, "Neoplasms About the Head and Neck"; Dudley A. Smith, San Francisco, "Cancer of the Rectum," and Albert H. Rowe, Oakland, Calif., "Food Allergy." In addition, there will be symposiums on disease of the biliary tract, conservation of maternal health and arthritis. The annual clinic dinner and alumni reunion will be held, Wednesday evening, March 30. Both scientific and technical exhibits will be on view.

WISCONSIN

Society News.—Drs. Harry J. Fortin and Albert M. Snell, Rochester, Minn., addressed the Rock County Medical Society, Beloit, February 23, on "Arthritis and Its Treatment" and "Diagnosis and Treatment of Peptic Ulcer," respectively.—— Drs. Forrester Raine, Milwaukee, and Leon Bloch, Chicago, addressed the Racine County Medical Society, February 17, on "Intestinal Obstruction" and "Genito-Urinary Conditions Simulating Gastro-Intestinal Diseases," respectively.——At a joint meeting of the Menominee and Marinette-Florence county medical societies, Menominee, February 18, Drs. Lloyd E. Hamlin, Norway, and Moses Cooperstock, Marquette, spoke on "Treatment of Burns" and "Advances in Treatment of Childhood Conditions," respectively.

Chapel and Library Given to Hospital.—Dedication ceremonies were held, February 21, for a chapel and a library which have been given to St. Luke's Hospital, Racine, by Dr. John G. Meachem, Jr. The chapel is a memorial to Dr. Meachem's wife, and the library to three generations of his family who have been physicians. The chapel seats fifty persons. The library contains more than 1,500 volumes. It also provides a meeting place for physicians and will probably be used by the Racine County Medical Society for its monthly meetings. Dr. Meachem, who is 86 years old, has practiced medicine for sixty-seven years. He was for many years a member of the municipal health board of Racine. With his father, Dr. John G. Meachem, Sr., he was one of the incorporators of St. Luke's hospital. His son, Dr. John G. Meachem III, who died in 1926, left the hospital an endowment of $180,000.

GENERAL

Education of the Handicapped.—Miss Beatrice McLeod, former state director of special education in Wyoming, has been appointed specialist in the education of physically handicapped children in the Office of Education, U. S. Department of the Interior. She will report work being done on behalf of all children with physical handicaps, cooperate with agencies and school officials, assist in surveys, and conduct studies to aid in the promotion of special treatment and training. Miss McLeod is a graduate of the University of Oregon and has been connected with the department of child study in Seattle and the department of psychology and educational research in Los Angeles. Her appointment marks an expansion of the activities of the office of education.

Dental Association Adopts Publicity Program.—The board of trustees of the American Dental Association, at a meeting in Chicago, January 18, approved plans for an organized program of educational publicity, submitted by a committee appointed previously. Three methods were contemplated in the report. "Educational messages," prepared either by the committee or by local dental societies with the committee's approval, will be presented through newspapers and other mediums to the public. A publicity director is to be appointed to prepare copy under supervision of the committee. The third feature of the plan is the use of the radio for dissemination of oral, dental and general health topics, the subject matter to be approved by a special committee.

National Negro Health Week.—The eighteenth annual observance of National Negro Health Week will be held, April 3-10. This movement was started in 1915 by Booker T. Washington as a National Health Improvement Week. When the U. S. Public Health Service assumed an active interest in the promotion of National Negro Health Week in 1921, plans were made for developing it into a year-round program for the improvement of the health of the colored population. The program for 1932 emphasizes practical health measures such as clinics, clean-up activities, and efforts to secure permanent health improvements and full time colored health workers. It is being arranged by the annual Tuskegee conference and other Negro organizations in cooperation with the U. S. Public Health Service.

Another Four Weeks of Automobile Fatalities.—The U. S. Department of Commerce announces that during the four weeks ended February 20, eighty-three large cities in the United States reported 604 deaths from automobile accidents as compared with 618 deaths during the four weeks ended Feb. 21, 1931. Most of these deaths were the result of accidents which occurred within the corporate limits of the city, although some accidents occurred outside the city limits. Considered by four week periods since January, 1929, total deaths from automobile accidents, whether within the city limits or outside, the lowest total (472) appears for the four-week period ended Feb. 23, 1929, and the highest (867) for the four week period ended Jan. 23, 1932. For the fifty-two week periods ended Feb. 20, 1932, and Feb. 21, 1931, the totals for all the cities were, respectively, 9,127 and 8,968, which indicate a recent rate of 25.5 per hundred thousand of population, as against an earlier rate of 25.6.

Medical Bills in Congress.—*Changes in Status:* S. 1975 has passed the Senate, amending an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever" by including Dr. Roger P. Ames among those honored by the act. S. J. Res. 65 has been indefinitely postponed by the Senate, proposing to extend the provisions of the World War Veterans' Act relating to hospitalization for nonservice disabilities to include any veteran who was honorably discharged from any term of service during the war, whether or not a subsequent period of service was terminated dishonorably. *Bills Introduced:* H. R. 10202, by Representative Shannon, Missouri, to authorize the purchase of the hospital leased by the Veterans' Administration at Kansas City, Mo. H. R. 10238, by Representative Leavitt, Montana, to create a reimbursable fund to be used for special medical and surgical work among the Indians of the Fort Peck Indian Reservation, Montana.

Society News.—The fifty-ninth annual meeting of the Northern Tri-State Medical Association (Ohio, Indiana and Michigan) will be held in Toledo, Ohio, April 12. Clinics will be conducted by Drs. Ora O. Fordyce and Newton W. Kaiser, Toledo, in psychiatry; Edward P. Gillette, Toledo, orthopedic surgery, and Udo J. Wile, Ann Arbor, Mich., dermatology. Among others, Drs. Stanley P. Reimann, Philadelphia, will speak on "Sulphydril—The Basis for Further Cell Division," and Dr. Dean Lewis, Baltimore, will speak at the annual banquet on "Lesions of Bone and Their Treatment."——Dr. Emmet Rixford, San Francisco, was elected president of the Pacific Coast Surgical Association at its annual meeting in Santa Barbara, February 25-27; Drs. Wayland A. Morrison, Los Angeles, and William B. Holden, Portland, Ore., were elected vice presidents, and Dr. Edgar L. Gilcreest, San Francisco, was reelected secretary. The eighth annual meeting of the association will be held at Del Monte, Calif., Feb. 24-26, 1933. Preceding this meeting, there will be two days of clinics in San Francisco.

Decrease in Consumption of Medicinal Whisky.—During the past year there has been a reduction of 14 per cent in the distribution and use of medicinal whisky, according to a recent statement of James M. Doran, commissioner of indus-

trial alcohol, before a subcommittee of the committee on appropriations of the House of Representatives at Washington. In 1931, the amount of medicinal liquor consumed was 1,201,000 gallons, as compared with 1,405,000 gallons in 1930. During the month of January, 1932, the consumption amounted to 107,768 gallons, in comparison with 143,642 gallons in January, 1931. The commissioner attributed the reduction to the higher price of medicinal spirits. "Medicinal whisky has gone up in price by reason of the increased carrying cost that follows from year to year and as it steadily evaporates each year and the interest and carrying charges and insurance continue to pile up, it tends to force the price up," he explained. Although more physicians have permits than during previous years, the number of prescriptions per physician seems to be less and the gross volume is less, according to the commissioner's statement.

FOREIGN

Memorial to Andrew Balfour.—Friends and associates of the late Sir Andrew Balfour have decided to found a memorial to him and are asking his friends all over the world to contribute. When funds are available it is proposed to erect a simple memorial to him at the London School of Hygiene and Tropical Medicine, of which he was the first director, and with the remainder of the amount received to establish the Andrew Balfour Memorial Fund to help students to study at the school. Contributions should be sent to the Honorary Treasurer, Andrew Balfour Memorial Fund, London School for Tropical Medicine and Hygiene, Keppel Street, London, W. C. 1. Balfour died in January, 1931.

Course in Individual Psychology.—Dr. Alfred Adler is to be the director of a special three weeks' course in individual psychology, which will be given, June 20-July 10, at Semmering, near Vienna. Courses announced include: medical psychology; principles of individual psychology; problems in mental life; understanding human nature; training for the three tasks of life, social intercourse, profession and love and marriage; individual psychology and the school and what teachers, social workers and consultants should know of medicine. The main courses will be given during the first two weeks, and the third week will be devoted to special branches. Dr. Adler, Dr. Francis G. Crookshank, London, England, and Dr. Leonhard Seif, Munich, will be among the instructors. Application should be made before April 1. Inquiries may be addressed to Mrs. Sofie Lazarsfeld, Seilergasse 16, Vienna 1.

Society News.—Dr. John D. Rolleston gave the first of the twentieth series of Chadwick Lectures, February 18, at the Medical Society of London, on "Benjamin Ward Richardson, His Life and Work."——Mr. W. R. Bett addressed the Osler Club of London, January 22, on Viktor Hensen, who discovered in 1856 the glycogenic function of the liver independently of Claude Bernard. Prof. Leonard Findlay addressed the club, February 19, on the history of rickets.——An International Congress on Asthma will be held in Paris, June 4-5. Dr. Warfield T. Longcope, Baltimore, will represent the United States on the program. Information may be obtained from the secretary-general, Dr. Jean Galup, 19 Rue Auber, Paris. A second series of conferences on military medicine is to be held, June 23-25, in Liége, Belgium, under the auspices of the Office International de Documentation de Médecine Militaire. All medical officers of the land, sea and air forces are invited to attend. Lieut.-Col. Médecin Jules Voncken, Hôpital Militaire Liége, is in charge of registration.

International Congress for Light.—The second International Congress for Light will be held in Copenhagen, August 15-18. The subjects to be discussed are: the rôle of pigment in light biology, with Dr. Brody of France and Prof. Miescher of Switzerland as principal speakers; the systematic action of light in tuberculosis, with Sir Henry J. Gauvain, England, and Prof. Jesionek, Germany, speakers; and heliotherapeutic and climatologic research in relation to public health, with Prof. Walter Hausmann, Austria, and Prof. August Rollier, Leysin, Switzerland. Papers on other subjects to be read by members must be communicated to the secretary-general before April 1. Any member wishing to read a paper is requested to send a short summary in English, French or German to the secretary-general before May 1. The president of the congress is Dr. Axel Reyn, Copenhagen, and the chairman of the American committee is Dr. Alfred Hess, New York. In addition to Dr. Hess, William W. Coblentz, Ph.D., of the Bureau of Standards, Washington, D. C., and Ellsworth Huntington, Ph.D., Yale University, New Haven, will be among the speakers. The secretary-general is Dr. A. Kissmeyer, Finsen Institute, Strand Boulevard, Copenhagen.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 13, 1932.

The Control of Cerebrospinal Fever

The ministry of health has issued a report that reviews the present knowledge of cerebrospinal fever. During the past year there has been a definite increase of the disease in England and Wales. Though outbreaks described by Sydenham and others were probably due to the disease, its recognition is usually attributed to Vieusseaux of Geneva, who described an outbreak in 1805. Danielson and Mason recorded one in Massachusetts in 1806. Many epidemics have been described since, chiefly in Europe and North America, military camps and barracks being particularly affected. Excepting small outbreaks in London and Rochester in 1865 and in Bardney in 1867, England and Wales was comparatively free until the beginning of the present century. Limited outbreaks in country districts were followed in 1907 and 1908 by 1,238 cases in Glasgow, with 838 deaths, and at the same time 725 cases occurred in Belfast. In the years preceding the war the annual number of cases among civilians in England and Wales varied from 200 to 300. But in the war year of 1915-1917 the numbers were respectively 2,566, 1,306 and 1,465. Following demobilization the numbers fell year by year, until the antebellum level was attained in 1923. Since then there has been a gradual increase, which has also been observed in other countries of Europe. The increased prevalence among civilians during the war years coincided with the 4,238 cases and 1,928 deaths in the army at home in 1914-1918. In England, cases occur all the year round, but the greatest incidence is in the winter and spring. The heavier incidence in rural than in urban districts, described in the United States, has not been observed. The majority of cases occur among children under 5.

The means of control consist first in compulsory notification and provision of means of bacteriologic diagnosis by the ministry of health. If isolation and the best available treatment cannot be obtained at home, hospital treatment is to be at once offered. The closest and most accurate observation on the efficiency of the serums in use is considered desirable. As one hospital rarely has sufficient cases for investigation, the ministry is collecting all the evidence as to the results of serum treatment, both as to methods of administration and as to the nature of the serum used. The cooperation of health officers, hospital medical officers and physicians is invited, and blanks for this purpose are supplied by the ministry on application.

Malformations of the Perineum

At the Royal College of Surgeons, Sir Arthur Keith devoted his final lecture on "Malformations of the Human Body Considered from a New Point of View" to the perineum. He pointed out that in the latter half of the second month transformations are being effected at both ends of the alimentary tract. The mouth is being separated from the nasal cavity by growth of the palatal septums, separating the breath-way and the food-way. At the same period the cloaca is being transformed so as to give the bowel a passage separate from that for the kidneys and genital glands. All these developmental operations involve processes akin to the healing of wounds. If they fail, the aid of the surgeon becomes necessary. A palateless fetus, with persistent cloaca, reverts to a condition that prevailed in the highest vertebrates 250 million years ago and still exists in the amphibia. About a hundred million years later, reptile-like creatures in South Africa were assuming mammalian palates and presumably similar changes were occurring at the other end of their bodies. In the human fetus of the fifth week, when the wolffian body still serves as a kidney,

the rectum and bladder join together high above the point at which the wolffian duct (vas deferens) terminates in the common cloacal passage. A few days later the renal (or ureteral) bud has sprung from the wolffian duct and the termination of the rectum has moved down on the common passage, so that it ends level with the termination of the wolffian duct. Before the end of the seventh week it has reached the site of the prostate and by the eighth week it has reached and fused with the cloacal membrane. It is usual to describe the separation of the rectum from the urogenital system as due to septal formation. But the terminal part of the developmental rectum is enveloped by a mass of rapidly growing embryonic tissue; the whole forms a migrating mass which carries the rectum along the cloaca until the surface of the perineum is reached. There is a mass movement of tissue of exactly the same nature as that which brings about the migration of the testis. The cloaca is not cleft; it passes into the service of the kidneys and genital glands.

The rectum may be arrested at any point of its three weeks' migration. It may open high in the bladder, but usually, if the cloacal anus persists, it opens into the prostatic urethra of the male or vulval cleft of the female, just below the hymen. Or it may cut its connection with the cloaca at any point in its descent and cease to grow. Hence it may terminate at any point between the rectovesical pouch and the perineum. The external anal depression may be formed or not. The better it is demarcated, the better the hope of finding the rectum low in the pelvis.

The migration of the rectum in the ancestry of mammals must have been as it occurs in man during the sixth to the eighth weeks of fetal development. The mechanism may be unknown, but the movement was connected with reproduction. With the appearance of reptiles took place a revolution in the methods of producing young. Long oviducts came into being, along which had to pass yolk-laden fertilized eggs, and there had to be intromission of spermatozoa within the cloaca. The lips of the cloaca underwent changes which helped to make the cloaca of the male serve as the intromittent organ. In early mammals the cloaca became, in the phraseology of Wood Jones, an intracloacal or implicate penis and then an external or explicate penis. In the lowest mammals—the monotremes—this change can be seen taking place. Clearly the passage for semen and urine could not serve the needs of the alimentary tract. Of the inner workings of the developmental movements there is no certain knowledge, but it can be surmised that they are brought about by growth-controlling substances formed in the developing genital glands. Dependence on them may be inferred from what happens as soon as the permanent anus is established. In the female the cloacal margins become the boundaries of the vulval cleft; the cloaca remains open, giving exit to bladder and vagina. In the male the margins of the cloacal orifice begin to unite at the margin of the anus to form the floor of the urethra. But if the testis is imperfectly developed this union fails at various stages, and hypospadias is produced.

Eliminating Street Noises

The injurious effects of noise, which was recently discussed in an editorial comment in The Journal, has also received attention in this country. The designing of a window to exclude, as far as possible, the noises of the street does not seem to have occurred to American builders. Mr. E. T. Fisk, managing director of Amalgamated Wireless (Australasia), Ltd., has designed a new type of window which, he asserts, has an efficiency of 75 per cent or over in deflecting street noises. A number of these windows have been fitted to offices and broadcasting studios in Sydney and Melbourne. The device has been scientifically tested in Britain. Light and air are not obstructed, but rain and dust are excluded. The window consists of a main frame into which are built subpanels or louvers, which can be turned outward at any angle required in any particular thoroughfare to deflect the noise. Inside the window are a number of sunblinds fitted on the louver principle, and the casement of the window is lined with fiber to absorb as much as possible of the remaining volume of sound that is able to get through the panels. For less sunny climates it is suggested that slips of glass on the louver principle could replace the inner sunblinds, used in the Australian tests, and would admit more light.

Illicit Drug Traffic

The Egyptian government's narcotics central bureau, in its report for 1931, shows that Turkey appears to have become an important center of illicit traffic, though the Turkish government is taking steps to deal with the matter. In Greece, again, traffickers are aided by the absence of provisions for the preventive arrest and detention of persons accused. Unfavorable comment is made on the number of cases in which members of Lloyd Triestino steamers figure as traffickers' agents. The most striking fact of the report is that whereas the number of drug addicts in Egypt decreased considerably last year, the number of traffickers increased. These effects seem to be due to one cause. There appears to be an increasing adulteration of the drugs, which increases the profits of the traffic and attracts more persons into it. On the other hand, the number of addicts is diminished, for they find that they can no longer afford to pay for the amount of drug necessary for the desired reaction. In 1930, 2,828 traffickers and 4,580 addicts were arrested; in 1931 the numbers were 4,327 and 2,882. The big development of the trade is shown by the amounts seized by the Egyptian customs and frontier guards; there was a total of more than 4,000 kilograms, while 11,649 kilograms was seized inside the country. It was found that 57 per cent of the addicts spent more than half their daily wage on drugs. A curiosity of the report is the instance of a Cairo contractor who paid his laborers in diacetylmorphine instead of money.

PARIS

(From Our Regular Correspondent)

Jan. 27, 1932.

The Reflection of Ultraviolet Rays by Mirrors

J. Cluzet and T. Kofman, in a communication presented to the Société de biologie of Lyons, showed by means of the cadmium photo-electric cell that ultraviolet rays under 3,000 angstroms behave with metallic mirrors exactly like ordinary light. The slight differences in the frankness of the images produced by these mirrors correspond to important differences in the quantity of ultraviolet rays reflected. Glass mirrors, whether backed with a silver coating or not, are much inferior as reflectors of ultraviolet rays to metallic mirrors. With a glass 1 mm. thick, only the anterior surface reflects ultraviolet rays, all that part of the cone of rays that penetrates the glass being entirely absorbed. From two points of view, these results are applicable to actinotherapy. It would be advisable, in order to improve considerably the output of ultraviolet ray apparatus, to employ as reflectors genuine metallic mirrors in place of plates of aluminum insufficiently polished. Likewise, the laryngoscopic mirrors used for actinic treatment of tuberculous laryngitis should be as aplanatic as possible—made of nickel or steel but not of glass, since glass absorbs nearly all the ultraviolet rays that fall on it.

Technic of Parathyroidectomy

Professor Leriche, surgeon of Strasbourg, has made a special study of parathyroidectomy in diseases associated with hypercalcemia. In a recent article in the *Gazette des hôpitaux*, he gives the details of his surgical technic. He has performed this operation fifteen times—three times for polyarthritis, twice for Recklinghausen's disease, six times for scleroderma, once for spontaneous keloid, once for painful tumor of the spine, twice for circulatory disorders. No deaths or complications resulted. He always obtained a frank diminution of the hyper-

calcemia, amounting to one fourth or even one third. Leriche gives minute details of the technic he developed which is necessary to secure a good result; for, while the parathyroid is sometimes easy to find when located between the branches of the inferior thyroid artery, near their bifurcation, it is sometimes situated higher, or is even hidden by the capsule of the thyroid gland. The surgeon sometimes perceives, after the operation and the histologic examination, that he has removed only a lump of fat. Mr. Leriche advises, when the gland is not visible, being too high or concealed, to place a double ligature on the inferior thyroid artery and to dissect out a strip of thyroid tissue in which the gland will be included. The simple ligature of the thyroid artery often suffices to cause ischemia and to improve the hypercalcemia. But the results are more certain when one performs the two operations: the arterial ligature and the removal of the gland. The question as to whether it is sufficient to remove the parathyroid on one side alone is left open by Leriche. He does not think that double excision is useful except in serious cases of Recklinghausen's disease, in polyarthritis with ankylosis of long standing, and in advanced sclerodermas.

The Antituberculosis Dispensaries

The report published by Mr. Marcel Moine, in charge of the statistical service of the Comité national de défense contre la tuberculose, contains facts concerning the activity of the dispensaries in 1930 and the mortality from tuberculosis in France. The report shows that the number of dispensaries continues to increase, but that, at the same time, their work increases from year to year. This activity is expressed by 86,400 consultations, during which 1,088,875 examinations, some clinical and some radiologic, were made; 611,815 consulting patients were admitted in 1930, 251,867 of whom were tuberculous, while 160,091 bacteriologic examinations were performed in the laboratories that collaborate with the antituberculosis organizations; 61,107 patients have been admitted to the institutions for prophylaxis and treatment. The collaboration of the medical profession with the work of the dispensaries is becoming more extensive every day; 59,634 patients, in place of 46,801 in 1929, were referred in 1930 by the practicing physicians.

Transmission of Lymphogranulomatosis to the Monkey

Professor Levaditi, in collaboration with Ravaut and Cachera, injected into a monkey's brain pus from human lymphogranulomatosis. An emulsion from this infected brain inoculated under the preputial skin of a patient affected with dementia paralytica produced in him a typical bilateral inguinal adenopathy. An antigen prepared with this heated emulsion was employed to produce intradermal reactions in patients affected with genuine lymphogranulomatosis and in others affected with various suspected lesions. Reaction was constantly positive in the first and negative in the other cases (one case somewhat doubtful). The results with these reactions when human antigen was used were similar, thus establishing frankly the identity between experimental lymphogranulomatosis in the monkey and the same disease in man.

The Treatment of Pulmonary Gangrene

Prof. H. Vincent and Mr. Stodel presented recently, before the Academy of Medicine, accounts of their extensive experience in the treatment of pulmonary gangrene. They distinguished genuine gangrene with sphacelus of the pulmonary tissue from other putrid disorders of the lung, with which it is often confounded. The disease may be caused by many different micro-organisms, among which the anaerobes are prominent, especially B. fusiformis, B. ramesus and, more rarely, B. perfringens. The spirochetes are not the usual agents of pulmonary gangrene. They may be absent in the fatal and the benign forms. But Streptococcus viridans or hemolyticus is found frequently, and, in association with fuso-spirillary symbiosis, creates a special factor of gravity. One may encounter the pneumococcus, Bacillus coli, B. pyocyaneus, and especially the enterococcus. Vincent has treated pulmonary gangrene, since 1917, with polyvalent antigangrene serum, which he prepared in collaboration with Stodel. The mortality, leaving out of consideration the cases in which treatment was begun too late, is 16 per cent. But this serotherapy must be supplemented by arsphenamine treatment when an examination of the sputum shows the presence of spirochetes, although the arsphenamines if employed alone may be inadequate. If there are streptococci, antistreptococcus therapy is needed in addition, and more rarely antipneumococcus therapy. Prophylaxis in the form of oral hygiene is required of patients who cough and also of patients operated on, for all the micro-organisms found in pulmonary gangrene come from the buccal cavity, from which they are drawn into the bronchi in breathing.

BERLIN

(From Our Regular Correspondent)

Jan. 25, 1932.

Draft of a Law Regulating Medicinal Products

The constitution of the German *reich* fully recognizes the right of the national government to enact legislation regulating the preparation, manufacture and sale of medicinal products, but federal control of such matters has been to date exceedingly meager. A law that will control the manufacture of medicinal remedies, and also a systematic recapitulation and reorganization of the existing laws, are needed. The draft of a law pertaining to medicinal products has been presented, which is, however, in the nature of a skeleton law, containing the requisite definitions of terms, delimitations of the applicability, and the necessary provisions of a general nature, as well as statements concerning the range of authority of the federal government. A number of existing provisions have been recast in a different form, while for other matters, such as the supervision of production and the introduction of a test for certain medicinal products (vaccines, therapeutic and protective serums, arsphenamines, digitalis leaves) new provisions have been drafted.

The proposed law is the foundation on which is to be erected later the system of regulation, which will constitute the decisive content of the law, from the standpoint of practical utilization and scope. Precisely this form of the skeleton law constitutes one of the chief points of difference in the violent controversy that has developed with the various commercial interests—namely, preeminently the pharmaceutic industry. The draft of the provisions concerning enforcement, as the decisive part, must be awaited before any definitive attitude can be taken toward the proposed legislation. The draft as already published contains, above all, fundamental definitions; for example, of the terms "medicinal products," "disease," "malady" and "medicine." It is important that also measures for the prevention of pregnancy, if they are likely to be injurious to health, as well as measures for the interruption of pregnancy, are to be controlled by the law.

One of the important paragraphs contains the regulations concerning the manufacture and sale of medicinal products. The needs of the situation are to be the determining factors in the promulgation of regulations concerning manufacture and sale. It is peculiar that it is not the production of a single preparation that requires authorization but the establishment of a pharmaceutic manufacturing plant. Such authorization may not be given an industrial plant unless the owner furnishes proof that he has the necessary scientific knowledge to carry on such an enterprise in a satisfactory manner. The aim is to eliminate the production of injurious medicaments or such as are likely to deceive the consumer, without imposing more burdens than actually necessary on the manufacture of unobjectionable products. All parties concerned have, on the other hand, an urgent interest in seeing that concessions are con-

ferred only on reliable producers. It is, for example, in no wise desirable that persons without scientific training shall interest themselves in the production of "specialties."

The number of medical specialties on the market in Germany varies in different reports, but the usual estimate ranges between five and six thousand. The state, the medical profession and the public are equally interested in the preservation of the pharmacy. It is the trustworthy dispensary of medicinal products.

Of course, trade in medicinal products that are known to be injurious to health is prohibited; for example, a tincture manufactured with methyl alcohol; likewise, the selling of medicine by pedlers, which is said to have become a common practice, is forbidden. It is important that regulations can be promulgated with regard to the collection, preparation, production, quality, testing, designation, packing, storing, transportation, prescribing and dispensing of medicinal products.

Whatever form the law shall assume, it will lead to a clarification of the complicated legal situation in the field of legislation pertaining to medicinal products and will furnish a broad basis for opposing with great energy the illegal traffic in medicinal products, which is eminently desirable, in order to provide our people in a rational and safe manner with the medicines and drugs that they need.

The fundamental demands—a responsible, scientifically trained director of a pharmaceutic manufacturing plant, declaration of the active ingredients, holding the producer responsible for the agreement of the declared ingredients with the actual composition, and the abolition of exaggerated or deceptive advertisements—will doubtless be realized in a generally satisfactory manner.

The law pertaining to the manufacture and sale of medicinal products aims, without placing any obstacles in the way of legitimate research and of the development of trade and commerce, to combat abnormal outgrowths and to erect a strong bulwark for the protection of public health.

Irradiation in Treatment of Exophthalmic Goiter

Since the influence of roentgen rays in producing a changed reactivity of the tissues has been known, successful attempts have been made to treat exophthalmic goiter by means of irradiation. Surgical intervention will attain its goal more quickly, whereas irradiation must be carried out for months. A number of studies on the subject (by Professor Schlecht and Dr. Hess, Krankenhaus Bethesda in Duisburg; Dr. Prüfer, Augusta Hospital, Berlin; Professor Halberstädter, Charité Hospital, Berlin) were recently discussed in the *Münchener medizinische Wochenschrift*. They consider that one cannot decide, in principle, definitively for or against irradiation, but that the whole condition of the patient, and, above all, the manner in which he reacts to irradiation, must be taken into account.

It may occur that in especially sensitive patients poisonous substances will be eliminated from the pathologically changed thyroid gland. If a severe type of goiter is involved, one cannot be certain that irradiation will be successful. An exacerbation of the condition during the period of irradiation may not necessarily be due to that intervention; for the disease may progress in spite of irradiation. In any event, great care must be exercised in the choice of the patients to be irradiated. Hess and Schlecht recommend that an adequate ray dosage be applied and that the ray treatment be not given up too soon. The interval between the beginning of irradiation and definite improvement or cure ranges between three and twenty-four months, the average time being sixteen months. Improvement is usually evident about four weeks after the beginning of the irradiation, and continues more or less slowly but steadily. As a rule, one cannot speak of a satisfactory condition even after the lapse of four months, for the end of the period of action, and thus the peak of the improvement, is not reached until no objectively demonstrable manifestations and subjectively no, or only slight, symptoms are present. This method of treatment must be supported by an internal, dietary and medicamentous therapy. A diet of low protein content (especially as regards meat) but of high carbohydrates and fat content is recommended. If the condition is serious, the patient must remain in bed during the first weeks of treatment. The first series of irradiation is best carried out at a roentgenologic center. During the several series of irradiations careful attention must be paid to the protection of both mind and body, and to the strict observance of the prescribed hours of rest in bed.

Celebration of Medical Society's Centenary

The Arztlicher Verein in Bremen celebrated, January 9, the hundredth anniversary of its existence. The commemorative address was delivered by the Munich clinician Prof. Friedrich von Müller, his subject being "Old Medical Books." At the memorial session, January 10, Professor Kirstein, the chairman of the society, gave an address in which he presented the need of an independent medical profession and of efficient methods of combating charlatanry. Of the 600 medical societies in Germany, the Bremer Verein is the fourth oldest, being antedated only by the societies of Lübeck, Donaueschingen and Hanover. The society has published an extensive study or history of public health activities, written by Tjaden, "Bremen und die bremische Aerzteschaft seit dem Beginn des 19. Jahrhunderts," which contains much valuable information in the fields of social hygiene and public health in general.

BELGIUM

(From Our Regular Correspondent)

Jan. 15, 1932.

Occupational Medicine in the Chemical Industry

Addressing recently the Société belge de médecine et de chirurgie du travail, Mr. Van Temsche discussed the organization of occupational medicine in the chemical industry. Occupational medicine is a rather new specialty the practice of which requires a thorough knowledge of physiology, pathology, occupational hygiene and social medicine. The nature of the work must be learned chiefly by experience, but the universities have created special chairs of hygiene and occupational medicine. The clinics of occupational medicine provide treatment for the workman; they provide for his rehabilitation, when necessary, and supervise the hygienic conditions of labor. The medical supervisor attached to the management of chemical manufacturing plants should coordinate the activities of the physician in the various plants. The latter should consider questions pertaining to the physiology of labor, the physical and psychologic selection of workmen, and the hygiene of labor; also questions pertaining to the pathology of labor, such as occupational diseases, first aid, and prevention of accidents and intoxications.

Medical Supervisors of Aid Societies

As the mutual aid societies enter more and more into collective bargaining with the medical syndicates, the medical supervisor becomes a necessity. Mr. Van Wilder discussed this question at the congress of the Fédération médical belge. The patient having the right to choose his physician, the mutual aid society, whose duty it is to pay for the treatment and the loss of time, must be entitled to exercise a supervising control over the insured and is not under obligation to place implicit trust in a physician that it has not selected. The medical supervisor of the mutual aid societies thus becomes an important personage in our professional life. He should possess qualities of the highest type: (1) recognized scientific ability, (2) long clinical experience, (3) an irreproachable professional reputation, assuring him of the esteem of his colleagues, and (4) a constant care to preserve the best professional ethics. The supervisor should renounce absolutely all outside medical

and surgical practice, at least as regards the members of the mutual aid societies of which he is the inspector. This condition, which is so difficult to carry out in mutual aid societies, is nevertheless of fundamental importance. Following the presentation of this paper, the congress adopted the following conclusions:

The federated physicians wish to collaborate in the most frank and open manner in the organization of a worthy and honest system of social medicine. For that purpose, a double control is indispensable: that exercised by the sick benefit association over its members, and that exercised by the medical syndicate over every physician attending members of the mutual aid societies. If the sick benefit association desires a medical supervisor, he should comply with the following conditions: 1. He should be chosen by the medical syndicate in agreement with the sick benefit association. 2. He must not practice medicine among the members of the mutual aid societies, or at least not among the members of the societies to which he is attached. 3. He must not, under any circumstances, interfere in the relations between the patient and the attending physician. The technical control as affecting the relations between the attending physician and the patient will be entrusted by the mutual aid societies to the medical syndicates. The latter agree under contract to exercise a vigilant control, of their own initiative, and to defer to special demands of the medical supervisor of the mutual aid societies. The latter, in turn, must recognize and comply with the decisions reached by the national council on medical ethics. The congress rejected as improper and vexatious any other system that is in opposition to these principles.

The Congress on Natality

In November, Brussels was the headquarters for the Congrès de la natalité, which was devoted to the study of problems associated with the declining birth rate. This manifestation, due to the activity of a group of physicians interested in medical ethics, the Société médicale belge of Saint-Luc, reflects great credit on its promoters and cannot help but exert a good influence on the environment. In some twenty papers, presented, for the most part, by recognized authorities, all the aspects of the vast problem were considered. Special mention may be made of the eugenic point of view, which was presented by Drs. L. Vervaeck and F. Daubresse. The former, considering the problem of the birth rate from the eugenic point of view, holds that the solution depends on the ensemble of measures favoring the biologic quality of the children procreated, as based on certain scientific notions pertaining to physiologic and pathologic heredity. All legal intervention is for the present premature, and all compulsory applications of eugenics, including sterilization of abnormal persons, are unjustified. On the other hand, the voluntary prenuptial medical examination, when the right of privileged communication is preserved, the measures adopted against infectious diseases and intoxication, and the aid to abnormal persons in the sense of amelioration, help to solve adequately many extremely difficult cases that at first sight appear to be unsolvable.

Mr. Daubresse, analyzing the eugenic methods and their scientific and moral value, pointed out that eugenics has its positive side, which furthers the procreation of healthy families, and a negative side tending chiefly to prevent, either by sterilization or by segregation, the reproduction of defectives. He denounced the wrong process of selection commonly brought about by birth control, but, for weighty reasons, approved taking advantage of the agenesic period of women.

Professor Schockaert and Dr. De Guchteneere treated, respectively, the dangers of abortion and of neomalthusianism for the female organism, and the pathologic conditions resulting from contraception, subjects almost identical in their scope and purpose, but the different forms of which serve to strengthen the convictions that are reached: the exceedingly high mortality resulting from abortion (seven times greater than from childbirth) and physical morbidity from infection and secondary sterility owing to loss of hormones, from the development of cancer and fibroma, and from mental disease of unsuspected character, all penalties levied by nature against those who abandon the primordial function of their being.

Accidents from the Use of Chromium

Addressing the Société belge de médecine et de chirurgie du travail, Dr. Langelez discussed recently accidents due to the use of chromium. He took up first certain general chemical ideas pertaining to chromium and its compounds. He then explained the qualities which cause that metal to be valued by reason of numerous industrial applications. In Belgium, workmen are exposed in the chemical industries to accidents from the use of chromium (manufacture of bichromates) and in tanning and electrolytic processes. After explaining the technology of various industries employing chromium, Langelez presented the results of an inquiry recently made in Belgium. In factories producing bichromates, of 130 workmen examined, 59 presented lesions of the skin, and 53 lesions of the nose; in the tanneries, in 104 workmen examined, 23 lesions of the skin and 10 of the nose were noted, and in factories making electrolytic use of chromium, in 47 workmen 32 lesions of the skin and 16 of the nose were observed. Industry does not present generalized injuries due to the use of chromium. The local injuries are of three different types: (1) skin lesions presenting extremely polymorphous aspects (eczema, acne, edema, warts, burns, cicatrices, cracks in the skin), and especially in the form of perforations of the skin (*trous de chrome*); (2) eye lesions (traumatic or tattooing of the cornea), and (3) lesions of the nose, located chiefly at the site of Jacobson's organ and comprising three stages—usually successive: irritation atrophy of the mucous membrane, ulceration, and perforation of the septum.

Dr. Langelez explained the prophylactic and curative treatment of these various special lesions, which, in some cases, may cause loss of earning power. He described also the hygienic measures to be employed by industrialists and the methods of individual prophylaxis that should be observed by the workmen.

AUSTRALIA

(From Our Regular Correspondent)

Jan. 28, 1932.

Scheme for Medical Service for the Middle Class

Conditions of medical practice and especially of public hospital service in Australia are fast reaching an impasse. Owing to the financial depression, patients are attending in increasing numbers at the public hospitals, which, to make matters worse, have suffered a reduction of income consequent on the decrease in private subscriptions and the reduction of government grants. Hospital managing boards are desperately striving to make up their deficiencies. Contributory schemes whereby, for 6d a week, subscribers receive free hospital and medical service are attractive to hospital managements, but they have the grave disadvantage that no payment is made to the medical men for services rendered. At present, the combined overdrafts of seven public hospitals in Melbourne amount to £196,000. It is felt quite definitely that the public hospitals for the present must revert to that service for which they were originally created—a service to the indigent—financed by charitable gifts from the community.

In order to cater to that growing social group which is unable to pay full private fees for medical service and to prevent exploitation of the medical profession, it is proposed to establish an organization, controlled by the British Medical Association, which would offer to the people, particularly in the industrial

suburbs, a means whereby they can insure against the requirement in the time of sickness of medical and nursing service and of pharmaceutic supplies.

The scheme will be in the nature of a voluntary insurance. It is proposed to charge a regular rate plus a definitely reduced charge for each service rendered. The scheme will be so arranged that freedom of choice will be given to the subscriber as regards his general practitioner, his consultant, his surgeon, his hospital and his chemist.

For a weekly premium varying from 5d for a single male or female under 21 years, to 1/- for a subscriber and wife and more than two children, the subscriber receives domiciliary medical service at a service charge of 3/6 per visit or consultation (the ordinary fee being from 10/6 to £1/1/-), investigational services—pathologic or roentgenologic (5/- service fee) and pharmaceutic services (service fee half rate per prescription). In country districts the domiciliary service fee may need to be increased, and a mileage charge made for distances over two miles. A separate contract provides nursing and hospital services, consulting and specialists services for a fee of 9d per week or 39/- per year. This will provide cash benefits to subscribers: hospital expenses £2 per week, consultant and specialist service—surgical operations (major) up to £9, obstetric fee £3/3/-, anesthetic, £1/1/-. In each district there would be a bureau which would act as the local administrative office of the scheme and at that office every applicant for public hospital treatment (apart from emergency) would be submitted to an investigation of his financial status.

A central hospital bureau would be established which would have a current knowledge of hospital beds available in the district for the various categories of cases. It is proposed ultimately to eliminate the private nursing home and establish, instead, self-supporting hospitals designed to accommodate subscribers to the scheme.

In order to be eligible to benefit from this scheme, subscribers must have an annual income of less than £208 in the case of the single man or woman, and less than £312 for a married man, the limit being raised by £25 for each child.

This scheme has aroused considerable interest among the medical profession of Australia, and it is considered that, with minor alterations, it will be extensively adopted. The scheme is the culmination of years of discussion and consideration, and provides the first serious attempt to provide a complete private medical service for the lower middle class. The acceptance of this scheme by the public will be watched with considerable interest.

The Australasian College of Surgeons

The Council of the Royal College of Surgeons of England is presenting a hand-wrought and chiseled silver mace to the Royal College of Surgeons of Australasia. The staff is decorated with a pattern of English roses, Australian wattle and New Zealand ferns, and it is inscribed with the names of the twenty-four members of the council for the present year. The total weight of sterling silver is 189½ ounces troy, and the length is 3 feet 10¾ inches. The mace will be presented to the Australasian body when Lord Moynihan visits Australia this year.

Under the will of the late Dr. Gordon Craig, the Royal Australasian College of Surgeons ultimately will benefit to the extent of about £40,000. Dr. Craig was a founder of the college and a member of the council from the time of its inception. The sum bequeathed to the college will be held in trust. One half of the income from it will be devoted to the promotion of research in surgery, and the remainder will be used to assist young graduates of exceptional ability and promise to take postgraduate work in surgery.

The Medical Press of Australia

Considering the relatively small population in Australia, it is well supplied with medical periodicals. The *Medical Journal of Australia*, published weekly in Sydney, is the official organ of all British Medical Association news and reports. The *Journal* receives all papers read at official meetings of branches and also publishes original research contributions by Australian medical scientists. It has recently added to its usefulness by publishing a series of special articles on diagnosis contributed at the request of the editor by Australian authorities in various branches.

The *Journal of the Cancer Research Committee* of the University of Sydney, published monthly, has as its aim the education of the general practitioner in cancer diagnosis and treatment; it records the developments in the organization of cancer treatment in New South Wales and also publishes research work done under its egis.

The *Melbourne Hospital Clinical Reports* publishes quarterly some of the excellent papers read at clinical meetings and makes a special feature of digests of the hospital records dealing with various subjects.

The *Australian and New Zealand Journal of Surgery*, published monthly as the official organ of the Royal Australasian College of Surgeons, deals mainly with research in surgery and surgical pathology. It is considered that Australia is too small to justify any other specialty publishing its own journal.

A recent arrival in the periodical field is the *General Practitioner*. In this journal, research work has no place; proceedings of societies are excluded. It is a monthly postgraduate course. The extent of its circulation is an index of its popularity among the group of practitioners for whom it is specifically intended.

The department of health of the commonwealth issues a small periodical entitled *Health*, which is now mainly an official circular. An educational type of journal is the *Health Bulletin*, published by the Victorian Department of Public Health.

Statistics of Private Obstetric Practice

An analysis of 2,000 accurate case records collected by the obstetric section of the Queensland Branch of the British Medical Association showed a maternal mortality rate of 0.4 per cent. The rate for Australia as a whole for 1930 was 0.529 per cent. The puerperal morbidity rate according to British Medical Association standards was 7.3 per cent. The most frequent abnormality of presentation was occipitoposterior, 8.8 per cent; this rate included 2.7 per cent who were delivered in that position. There were 2.9 per cent breech presentations, 0.1 per cent face, and 0.05 per cent brow. Prolapse of the cord occurred in 0.45 per cent and hydramnios in 0.35 per cent.

Under the heading of abnormal labor, placenta praevia occurred nine times (0.4 per cent) with the loss of only one mother. The antepartum hemorrhage rate was 0.8 per cent and the postpartum rate, 1.9 per cent. Although 6.8 per cent had albuminuria, only 0.6 per cent developed eclampsia. Pyelitis occurred in 1.7 per cent.

The fetal mortality was 3.3 per cent, made up of the combined rates of macerated fetuses and 2.3 per cent stillbirths. Plural births occurred in 1.2 per cent of the series.

Lacerations of the perineum occurred in 25.9 per cent of the series, made up as follows: first degree, 16.2 per cent; second degree, 8.1 per cent; third degree, 0.2 per cent, and episiotomies, 1.3 per cent.

As regards the environment of the delivery in its relation to puerperal morbidity, it was found that 7.5 per cent of those attended in maternity homes were morbid, 6.5 per cent in general hospitals and only 4.5 per cent in the group that were delivered at their homes. Consideration, however, must be given to the tendency for difficult cases to be attended in a hospital. There were 23 per cent instrumental deliveries with a morbidity rate of 10.2 per cent. Of the patients who were morbid in the puerperium, 2.6 per cent of the total series were mild cases, 1.8 per cent had breast inflammation and congestion, 0.9 per cent had sapremia, and only 0.3 per cent developed severe sepsis.

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TURKEY

(From Our Regular Correspondent)

Ankara, Feb. 16, 1932.

Antihookworm Campaign in the Black Sea Region

The eradication of malaria, syphilis, tuberculosis and trachoma was the chief public health problem before the World War. Another serious problem has presented itself as an outcome of the war, toward the end of which reports came from the Black Sea region that hookworm was threatening to become a menace. Practically nothing was known about the existence of hookworm in Turkey until that time. The few isolated cases that had come under observation before had been accidentally discovered in natives from Mesopotamia, the Yemen and the Hejaz who were undergoing treatment at the Istanbul city hospitals for some other disease. Twice in 1914 and 1915, hookworm had been discovered in the stools of inmates of the army hospital at Kuleli on the Bosphorus. About a year later, Prof. Neshat Omer reported that among more than 1,000 laboratory tests made at the Red Cresent Hospital in Palestine four cases of infestation with Ancylostoma duodenale had been diagnosed.

The postwar publications of Prof. Tevfik Salim Pasha, Akil Muhtar and others concerning Necator americanus in natives from the Black Sea region resulted in an investigation at the hospital laboratories in the provinces, which plainly demonstrated that hookworm was confined to the Black Sea region. It was decided, therefore, to organize an antihookworm campaign in the Rize province in the southwestern part of the Caucasus, where the climate and living conditions favor the spread of the disease.

In 1930, the ministry of health and social assistance asked Dr. Ziya, assistant professor of bacteriology at the Haydar Pasha medical school, to make an investigation there with the aid of a field laboratory and four sanitary inspectors. After a year's work, Dr. Ziya reported that the conditions were as follows:

The laboratory tests made in the different communities of the Rize province revealed a high incidence in the Hopa district, and antihookworm activities were begun there first. By the end of February, 1930, in the Rize province, 5,989 persons had been examined, with the result that infestation was discovered in 3,096 persons, or 51.6 per cent. Though 50 per cent may be taken as the average, in some communities the index of infestation was as low as 41 per cent and in others as high as 76 per cent. The distribution of the infestation varied with different family groups. Either all or a great majority of the members of certain families were involved, while in certain other families there was no infestation. This may seem paradoxical, but it is explained by the particular living conditions of these communities. The microscopic examinations did not show any marked difference as far as sex and age were concerned. The accompanying table shows the result of 3,799 examinations.

Incidence of Infestation

Age	Number of Stools Examined	Presence of Eggs	Absence of Eggs	Per Cent
1-10 years.....	1,126	597	529	53.1
11-20 years.....	1,089	576	513	52.8
Above 20 years.....	1,584	859	725	54.2
	3,799	2,032	1,767	

In his study of the adult parasites, Dr. Ziya has invariably found Necator americanus but never Ancylostoma duodenale. If parasites are found in large numbers, the eggs are numerous also, but the eggs were not always found at once, so in a number of cases three or more specimens had to be produced from one person. As it would have been too time consuming to make more than one examination per person, treatment was prescribed for everybody when the egg index in a community approached 50 per cent. From ten to fifteen days after administration of the anthelmintic, the stools of persons found infected previous to treatment were reexamined.

By the end of February, 1930, 500 persons had been treated. Laboratory examination following treatment revealed, however, that in 8.6 per cent eggs were still present in those persons whose stools had at the previous examination contained numerous eggs. After a second treatment, eggs were still present in 1 per cent.

In the beginning of the campaign a mixture of carbon tetrachloride and oil of chenopodium was used, but as symptoms of intolerance were observed, the use of oil of chenopodium was abandoned and the treatment continued with pure carbon tetrachloride only, the purity of the product being ascertained previously at the Ankara chemical laboratory. One dose of the tetrachloride in water was administered to 1,201 persons, from 0.1 to 0.15 cc. to each year of age for children, and a maximum dose of 2 cc. for adults. In 20 per cent of these persons, violent headache and drowsiness was observed, lasting from six to twelve hours, but as long as forty-eight hours in some cases. In an 8 year old child, vomiting and violent pain in the abdomen appeared on the day following the administration of the medicine, and the child died three days later though everything was tried to avert such an outcome. Dizziness with disturbed eyesight but without headache was present in quite a number of cases. The method of administration therefore was changed to the giving of two doses in solution and two hours later magnesium sulphate. Five hundred persons have had this treatment, and in 1 per cent of them dizziness and fainting was being observed within from one to two hours; in 5 per cent there was headache accompanied by drowsiness, and in another 5 per cent these symptoms were accompanied by an elevation of temperature to 99.5 F.

To eliminate these undesirable results, the dose of tetrachloride was decreased to 1.5 cc. for adults and from 0.1 to 0.2 cc. as the maximum dose for children. No important untoward symptoms were observed with the latter dosage, but in from 2 to 3 per cent of the persons treated slight dizziness was present.

The examination of stools on a large scale in the Rize province revealed that the eggs of Ascaris, Trichocephalus and Oxyuris vermicularis often existed side by side with those of Necator americanus, the eggs of Ascaris being found in 28 per cent and the eggs of Trichocephalus in 6 per cent. It appears that Oxyuris vermicularis and Ascaris also yield to carbon tetrachloride, as they were seen occasionally, but after treatment the eggs of Ascaris and Trichocephalus were invariably present in much greater numbers. It is almost certain that before the World War hookworm did not exist in the Rize province. It is believed that hookworm was introduced into the Rize province by Russian laborers engaged there in road construction during the time the province was being occupied by the Russian army toward the end of the war. The southern part of the Rize province is mountainous, the coast has fertile valleys, and there is an abundant rainfall. There are numerous springs. The humidity of the soil is high. The province is densely populated, and agriculture is the main occupation. The privies in rural communities are defective and insufficient in number. The humidity of the soil, its pollution with different kinds of manure, and the fact that the people spend the greater part of the year in the fields all contribute to the wide spread of the disease. Since the beginning of the antihookworm campaign, sanitary privies have been installed and instruction has been given the population as to the prevention and mode of transmission of the disease. The indiscriminate use of manure on fields, the use of contaminated wells for their watering and the pollution of drinking water have been strictly prohibited. The area to be covered by the antihookworm campaign is large; its sphere will gradually be widened

Marriages

ROBERT BURNS SANDERSON, Crown Point, Ind., to Miss Alpha Lorraine Rodenberger of Springfield, Ill., Dec. 25, 1931.

GEORGE R. DILLINGER, French Lick, Ind., to Miss Margaret Dowden of Jeffersonville, Dec. 27, 1931.

WILLIAM BAIRD STUART, Carlisle, Pa., to Mrs. Hanne Daube Berk of Germany, January 7.

THEODORE R. KOENIG, Edgewood, Pa., to Miss Helen Clayson of Pittsburgh, January 1.

JAMES ALFRED GOOCH to Miss Lelia Watkins Stacy, both of Richmond, Va., January 4.

MATHEW GRISWOLD, JR., to Miss Charlotte Brevillier, both of Erie, Pa., Dec. 22, 1931.

RANDALL B. HAYES, Jersey Shore, Pa., to Miss Sara Bitler of Millville, Dec. 8, 1931.

ROBERT IRVING HILLER to Miss Ruth Krome, both of Milwaukee, January 3.

RICHARD S. BECHK, Cleveland, to Miss Josephine Dohman, recently.

Deaths

David Clark Thompson ✠ Bloomfield, N. J.; University and Bellevue Hospital Medical College, New York, 1911; fellow of the American College of Surgeons; served during the World War; on the staffs of the Mountainside Hospital, and St. Vincent's Nursery and Babies' Hospital, Montclaire and the Essex County Hospital for Contagious Diseases, Belleville; aged 46; died, in February, of heart disease, while aboard the *S. S. Pastores*, bound for the West Indies.

John Milton Allen ✠ St. Johnsbury, Vt.; University of Vermont College of Medicine, Burlington, 1890; Bellevue Hospital Medical College, New York, 1891; member of the New England Surgical Society and fellow of the American College of Surgeons; attending surgeon to the Brightlook and St. Johnsbury hospitals, St. Johnsbury, Orleans County Memorial Hospital, Newport, and consulting surgeon to the Littleton (N. H.) Hospital; aged 64; died, February 9.

Charles Whitney Page, Hartford, Conn.; Harvard University Medical School, Boston, 1870; member of the Connecticut State Medical Society, Massachusetts Medical Society, American Psychiatric Association and the New England Society of Psychiatry; aged 86; died, February 16, of chronic myocarditis and acute bronchitis.

Arthur John Weaver ✠ Muscatine, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1895; past president of the Muscatine County Medical Society; fellow of the American College of Surgeons; member of the state board of health; on the staff of the Bellevue Hospital; aged 66; died, March 1, in a local hospital.

Sydney Henry Smith, Salinas, Calif.; John A. Creighton Medical College, Omaha, 1909; member of the California Medical Association; aged 52; died, Dec. 17, 1931, in the University of California Hospital, San Francisco, of carcinoma of the left suprarenal, with metastases to the lungs, liver and vena cava.

John H. Bailey, Clyde, Texas; Memphis (Tenn.) Hospital Medical College, 1895; member of the State Medical Association of Texas; aged 61; died, February 13, in a hospital at Abilene, of injuries received when the automobile in which he was driving was struck by a train.

Henry B. Luhn ✠ Spokane, Wash.; University of Pennsylvania School of Medicine, Philadelphia, 1891; fellow of the American College of Surgeons; surgeon to the Sacred Heart Hospital; aged 64; died, February 10, in Moscow, Idaho, of myocarditis and edema of the lungs.

Charles Sleeper Gilman, Lakeport, N. H.; Baltimore Medical College, 1896; member of the Massachusetts Medical Society and the American Proctologic Society; aged 58; died, January 20, in the Laconia (N. H.) Hospital, of gallstones and cholecystitis.

George Albert Haveman, Columbus, Ohio; Miami Medical College, Cincinnati, 1905; member of the Ohio State Medical Association and the Associated Anesthetists of the United States and Canada; aged 50; died suddenly, February 20, of heart disease.

Albert Ferdinand Beddoe, Dallas, Texas; Memphis (Tenn.) Hospital Medical College, 1894; formerly professor of diseases of children, Baylor University College of Medicine; aged 78; died, January 27, of diabetes mellitus and pulmonary edema.

Charlotte Fairbanks, St. Johnsbury, Vt.; Woman's Medical College of Pennsylvania, Philadelphia, 1902; fellow of the American College of Surgeons; served during the World War; aged 59; died, February 13, in Framingham, Mass., of brain tumor.

William C. Canfield, Newton, Mass.; University of Pennsylvania School of Medicine, Philadelphia, 1888; member of the Rhode Island Medical Society; aged 74; died, February 8, in the Westborough (Mass.) State Hospital, of arteriosclerosis.

Louis Schapiro, Bangkok, Siam; George Washington University Medical School, Washington, D. C., 1907; representative of the International Health Division of the Rockefeller Foundation; aged 45; died, February 4, of pulmonary embolism.

Abijah Orange Buck ✠ Elizabeth, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1890; served during the World War; on the staff of the Alexian Brothers' Hospital; aged 62; died, February 15, of heart disease.

Theodore J. Schweer ✠ Beardstown, Ill.; Rush Medical College, Chicago, 1897; formerly postmaster; president of the sanitary district and for five years president of the school board; aged 62; died, February 17, of pneumonia.

Charles Homer Holaday, Detroit; Washington University School of Medicine, St. Louis, 1911; aged 51; died, February 12, in a hospital at Miami, Fla., of acute hemorrhagic pancreatitis, chronic hypertension and arteriosclerosis.

George Calvin Skinner, Hamilton, Ohio; Miami Medical College, Cincinnati, 1879; past president of the Butler County Medical Society; formerly member of the board of education; aged 75; died, January 21, in the Mercy Hospital.

Otta Clarence O'Kell, Excelsior Springs, Mo.; Northwestern Medical College, St. Joseph, 1893; member of the Missouri State Medical Association; served during the World War; aged 62; died, February 2, of heart disease.

James M. Merryman, Columbus, Ohio; University of Wooster Medical Department, Cleveland, 1870; Civil War veteran; formerly member of the state legislature; aged 87; died, February 8, of arteriosclerosis and senility.

Frederick W. Bromley, Whitewater, Wis.; University of Pennsylvania School of Medicine, Philadelphia, 1881; member of the State Medical Society of Wisconsin; aged 80; died, February 4, in Palmyra, of cerebral hemorrhage.

Ernest Gustav Nathaniel Tillmanns, Los Angeles; Rush Medical College, Chicago, 1914; member of the California Medical Association; served during the World War; aged 50; was killed, January 25, in an airplane accident.

Robert Merritt Davis, Birmingham, Ala.; Tulane University of Louisiana Medical Department, New Orleans, 1895; member of the Medical Association of the State of Alabama; aged 57; died, February 9, of heart disease.

James Heustis Jones ✠ Camden, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1901; past president and secretary, Wilcox County Medical Society; aged 54; was found dead in bed, February 2.

Willis Warren Dean, Sioux City, Iowa; Medical Department of Omaha (Neb.) University, 1895; member of the Iowa State Medical Society; formerly police surgeon; aged 59; died, February 13, in a local hospital.

John Cady Parsons ✠ Marcellus, N. Y.; University of the City of New York Medical Department, 1891; on the staff of the Crouse-Irving Hospital, Syracuse; aged 71; died, February 24, of cerebral thrombosis.

Robert Cornelius Fleming, Louisville, Ky.; College of Physicians and Surgeons, Baltimore, 1900; served during the World War; aged 54; died, February 12, in the Methodist Episcopal Deaconess Hospital.

Frank Lyall Griswold, Mazomanie, Wis.; Milwaukee Medical College, 1905; member of the State Medical Society of Wisconsin; served during the World War; aged 54; died, February 11, of heart disease.

James Glynn Gregory, Norwalk, Conn.; College of Physicians and Surgeons in the City of New York, 1868; member of the Connecticut State Medical Society; bank president; aged 88; died, February 1.

Herbert Cline Turrell, Durango, Colo.; Colorado School of Medicine, Boulder, 1902; member of the Colorado State Medical Society; aged 55; died, January 12, in a hospital at Pasadena, Calif.

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Matthew H. Blackburn, Princeton, Ill.; State University of Iowa College of Medicine, Iowa City, 1889; member of the Illinois State Medical Society; aged 70; died, February 8, of angina pectoris.

Thomas J. Hardison, Carters Creek, Tenn.; University of Nashville Medical Department, 1880; member of the Tennessee State Medical Association; aged 75; died, January 30, of angina pectoris.

Albert Lawrence Thompson, Makanda, Ill.; St. Louis College of Physicians and Surgeons, 1898; aged 54; died, February 5, in the Holden Hospital, Carbondale, of carcinoma of the throat.

Joseph Ambrose Dittmore ✠ Chicago; Bennett Medical College, Chicago, 1915; on the auxiliary staff of the Alexian Brothers' Hospital; aged 55; died, February 15, of cerebral hemorrhage.

Jed Burt Freund, Butte, Mont.; University of Michigan Medical School, Ann Arbor, 1900; on the staff of St. James Hospital; aged 57; died, February 3, of chronic nephritis and myocarditis.

Thomas Adolph Heath, Shiloh, Miss.; Hospital College of Medicine, Louisville, Ky., 1881; member of the Mississippi State Medical Association; aged 77; died, January 17, of lobar pneumonia.

Edward Thomas Craney, Orlando, Fla.; Medico-Chirurgical College of Philadelphia, 1910; member of the Florida Medical Association; aged 54; died, February 22, of pneumonia.

George W. Washburn, Star City, Ind.; Eclectic Medical Institute, Cincinnati, 1894; formerly county coroner and county health commissioner; aged 66; died, January 31, of cerebral embolism.

Robert Groves McCarthy, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; aged 55; hanged himself, February 12.

Elizabeth C. Kane ✠ Memphis, Tenn.; University of Nashville Medical Department, 1898; aged 55; died, February 10, in the Union Memorial Hospital, Baltimore, of carcinoma of the colon.

Fred Hill Fowler ✠ Joliet, Ill.; Medical Department of Hamline University, Minneapolis, 1897; member of the Kansas Medical Society; aged 57; died, February 15, of an injury to the spine.

Virgil Maro Dow, New Haven, Conn.; Yale University School of Medicine, New Haven, 1864; Civil War veteran; aged 98; died, February 19, of cerebral hemorrhage and arteriosclerosis.

Louis Proudfit, Osceola, Ind.; Medical College of Indiana, Indianapolis, 1902; member of the Indiana State Medical Association; aged 55; died suddenly, February 2, of heart disease.

Germanus J. France, Baltimore; Maryland Medical College, Baltimore, 1911; formerly county coroner; aged 42; died, February 9, of cerebral embolus and vegetative endocarditis.

Anna K. B. Hyden, Alcester, S. D.; Keokuk (Iowa) Medical College, 1897; member of the South Dakota State Medical Association; aged 58; died, February 2, of cerebral hemorrhage.

Joseph Franklin Griggs ✠ Tacoma, Wash.; University of Pennsylvania School of Medicine, Philadelphia, 1895; aged 60; died, February 9, of a skull fracture received in a fall.

Francis Brinton Jacobs ✠ West Chester, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1900; aged 57; died suddenly, February 11, of cerebral hemorrhage.

Washington La Fayette Doss, Columbus, Miss.; University of Nashville (Tenn.) Medical Department, 1890; aged 65; died, January 22, in Crawford, of chronic endocarditis.

William Potter Langworthy, Watch Hill, R. I.; College of Physicians and Surgeons in the City of New York, 1876; aged 80; died, Dec. 17, 1931, in Daytona Beach, Fla.

Charles Fredrick Hera, New Richmond, Ohio (licensed, Ohio, 1896); member of the Ohio State Medical Association; aged 75; died, February 2, of cerebral hemorrhage.

Joseph Arnald Denman ✠ Brackettville, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1901; aged 59; died, February 12, of heart disease.

Robert A. Wallace ✠ New Castle, Pa.; Miami Medical College, Cincinnati, 1877; on the staff of the New Castle Hospital; aged 76; died, February 6, of heart disease.

Joseph Frank Chretien, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1890; formerly a druggist; aged 69; died, December 17.

Clarence E. Exline, Canton, Ohio; Ohio Medical University, Columbus, 1897; served during the World War; aged 60; died, February 17, of pernicious anemia.

Jacob Paul Stroman, McClellanville, S. C.; University of Georgia Medical Department, Augusta, 1885; aged 68; died, January 30, of heart disease and nephritis.

Michael Joseph Brennan, McSherrystown, Pa.; Temple University School of Medicine, Philadelphia, 1919; aged 39; died, February 4, of cerebral hemorrhage.

William Lincoln Bates, Jamestown, R. I. (licensed, Rhode Island, under the Act of 1895); aged 77; died, January 10, of chronic myocarditis and senile debility.

George Wesley King, South Point, Ohio; Ohio-Miami Medical College, Cincinnati, 1910; member of the county board of health; aged 57; died, January 6.

John Martin Weekley, Ulmer, S. C.; Medical College of the State of South Carolina, Charleston, 1860; aged 94; died, January 25, of hypostatic pneumonia.

John Bernard Plent ✠ Cleveland; University of the City of New York Medical Department, 1891; aged 76; died suddenly, February 16, of heart disease.

William Jeremiah Woodlin ✠ Columbus, Ohio; University of Michigan Medical School, Ann Arbor, 1895; aged 55; died, February 9, of heart disease.

Samuel James Staples, Bow Island, Alta., Canada; University of Toronto Faculty of Medicine, Toronto, Ont., 1905; died recently, at Medicine Hat.

Charles F. McLain, Calhoun, Ga.; Atlanta Medical College, 1895; member of the Medical Association of Georgia; aged 64; died, Dec. 26, 1931.

Carey Wiley Kendall, San Gabriel, Calif.; Hospital College of Medicine, Louisville, Ky., 1898; aged 63; died, Dec. 30, 1931, of heart disease.

John Haymaker Service, Philadelphia; Jefferson Medical College of Philadelphia, 1889; aged 75; died, February 11, of suppurative prostatitis.

Robert Lee Dowell, Chillicothe, Mo.; University Medical College of Kansas City, 1893; aged 64; died, January 30, of cerebral hemorrhage.

Eugene H. Levering ✠ Stroudsburg, Pa.; University of the City of New York Medical Department, 1893; aged 63; died, February 10.

Paul B. de La Barre, Port Clinton, Ohio; Western Reserve University Medical Department, Cleveland, 1887; aged 80; died, Dec. 8, 1931.

James W. Hensley, Dewville, Texas; University of Tennessee Medical Department, Nashville, 1888; aged 67; died, Dec. 27, 1931.

Charles Benell, Diamond, Ind.; Medical College of Indiana, Indianapolis, 1889; aged 65; died, January 30, of cerebral hemorrhage.

Francis Wood Shaw, Vancouver, B. C., Canada; University of Toronto Faculty of Medicine, 1879; aged 77; died, January 3.

Walter Tisdale, Simcoe, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1877; aged 76; died, Dec. 23, 1931.

Ezekiel Grant Dilworth, New York; Baltimore Medical College, 1895; aged 68; died, February 11, of coronary thrombosis.

Lawrence R. Brown, Sharon, Ga.; University of Georgia Medical Department, Augusta, 1888; aged 69; died, Nov. 26, 1931.

William Calhoun Dawson ✠ San Francisco; University of California Medical Department, 1907; aged 51; died, Nov. 13 1931.

Homer Michener, Wichita, Kan.; Eclectic Medical Institute, Cincinnati, 1890; aged 68; died, January 4, of myocarditis.

Miles D. Baker, Carbondale, Ill.; Medical College of Ohio, Cincinnati, 1875; aged 78; died, in February, of angina pectoris.

Angela B. Farley, Cincinnati; Miami Medical College, Cincinnati, 1906; aged 56; died, February 10, of carcinomatosis.

Gustave Tedtman, Chicago; National Medical University, Chicago, 1897; aged 67; died, February 10, of heart disease.

William Herman Stone, Wilder, Tenn. (licensed, Tennessee, 1914); aged 45; died, February 8, of heart disease.

David H. Funderburk, Lancaster, S. C.; Maryland Medical College, Baltimore, 1904; aged 66; died, Dec. 4, 1931.

William Irwin Taylor, Port Credit, Ont., Canada; Trinity Medical College, Toronto, 1898; died, Nov. 24, 1931.

Bureau of Investigation

NORMAN BAKER VS. THE AMERICAN MEDICAL ASSOCIATION

The Jury Declares the Association Not Guilty of Libeling Baker

Norman Baker of Muscatine, Iowa, who headed a number of mercantile enterprises, including the ownership of a radio broadcasting station and an alleged cancer cure, was dealt with, editorially, in THE JOURNAL of April 12 and April 19, 1930, and in *Hygeia* for May, 1930. As a result of these publications, Baker brought suit for libel against the American Medical Association, asking one-half million dollars in damages. This case came to trial in the federal district court in Davenport, Iowa; the trial opened on February 9 and continued until March 3, covering a period of nearly four weeks. Voluminous testimony was offered by the American Medical Association, both through physicians who went on the stand as experts and by scores of depositions that had been gathered by the Association from various parts of the Middle West; much testimony was also put in by Baker. On March 3, the jury returned a verdict for the American Medical Association.

The case was heard before Federal Judge Gunnar H. Nordbye of Minnesota. In this connection, Norman Baker's weekly paper, the *Midwest Free Press*, prior to the trial expressed the editorial opinion that because the case was going to be heard before a judge who was coming from Minnesota, Baker would "not get all that's coming to him." To quote:

> "We fear he [Norman Baker] will not get all that's coming to him—Judge Dewey was to hear the case and at the eleventh hour now announces a judge from Minnesota coming to try the case—that may be O. K. but WHY WE ASK, is it necessary to go away out of our district to secure a Federal Judge—we wonder how Dr. Mayo, who is a power in Minnesota would like it if he were in Mr. Baker's place and an Iowa judge from Muscatine section would hear the case—YES WE WONDER—Mr. Baker's formulas have accomplished more than Dr. Mayo ever did for cancer, and Baker will have to fight many years yet to educate the ignorant prejudiced and lazy thinking ones who are dominated by organized medicine." [Capitals as in the original.—ED.]

The implications in this statement are fairly obvious.

The jury before whom the case was heard was a group of substantial farmers or retired farmers and merchants. Counsel for the Association were Messrs. Edward M. Burke and Clement L. Harrell of the law firm of Loesch, Scofield, Loesch and Burke of Chicago, with Mr. C. M. Dutcher of the firm of Dutcher, Walker and Ries of Iowa City, who are the attorneys for the Iowa State Medical Society. Norman Baker was represented by two attorneys, Messrs. Charles P. Hanley of Muscatine and J. C. France of Tipton.

Appearing as medical experts for the Association were Dr. Francis Carter Wood of New York, Dr. Joseph Colt Bloodgood of Baltimore, Dr. Burton T. Simpson of Buffalo, Dr. Max Cutler of Chicago, and Dr. Albert C. Broders of Rochester, Minn. Several other physicians also aided the Association, appearing either as witnesses during the trial or by depositions.

BAKER'S ENTERPRISES

Originally, Baker's enterprises seemed to have been wholly or mainly in the commercial field. He sold radio sets, storage batteries, flour, coffee, canned fruit, silverware, brooms, alarm clocks, overcoats, mattresses, automobile tires, typewriters, paints, and many other things. He advertised his wares not only through printed catalogs and through his magazine, *T N T (The Naked Truth)*, but, more important, over his radio station, KTNT of Muscatine. Baker's first excursion into the medical field seems to have been the use of his radio station to advertise an injection treatment for varicose veins, exploited by a Davenport physician.

Baker had two (and, for a short time, three) alleged treatments for cancer that were being given at Muscatine in the building that was known as the "Baker Hospital." They were (1) a treatment for "external" cancer, an arsenic powder exploited by Harry M. Hoxsey, whose methods[1] have been dealt with in these pages, and (2) the injection treatment for "internal" cancers of one Charles O. Ozias of Kansas City—who also has received some publicity through THE JOURNAL.[2] When the American Medical Association, through its Bureau of Investigation, first began warning the profession and the public against the Baker cancer-cure business, Baker made the fantastic claim that the American Medical Association had offered him a million dollars for his "cancer cure," in order that it might be withdrawn from the market, so that sufferers of cancer would be compelled to resort to surgery, x-rays and radium! When Baker himself was on the stand during the first day of the trial, he denied that he had ever made such a statement, but his denial was offset by the presentation of a letter from the files of the Bureau of Investigation, signed "N. Baker" and which Baker had to admit he had dictated. In this letter Baker definitely stated that it was a "fact that the Medical Trust offered one million dollars on January 3rd 1930 to suppress this treatment."

Norman Baker was the first witness to be put on the stand by the plaintiff, in order to show that the material published by the American Medical Association had caused him serious financial damage. Baker declared that his monthly receipts from his cancer-cure activities started at $1,380 for October, 1929, climbed to $75,232 for June, 1930, and, following the articles published by the American Medical Association, dwindled until in January, 1932, he took in only $7,008.

BIOGRAPHICAL NOTES ON BAKER

Baker, on cross-examination, admitted that his education went no further than a year and a half of high school work. After leaving school he traveled around the country working in machine shops as a die and tool maker. After two years of this, he went into the vaudeville business, putting on "hypnotism" acts "along psychological lines—mental work." He continued in that field for about eight or ten years, but in 1914 came back to Muscatine, where he started to manufacture calliopes. This work was interrupted for a short time when he went on the road again "putting on an act." In 1920, his factory burned and he then started a mail-order business. His broadcasting station went on the air in November, 1925, at which time he was running the "Tangley Institute," "Tangley Company," "Tangley Correspondence School," and some other things. He had a mail-order "art school," although he admitted that he could not paint a picture for his life. Nevertheless, he advertised to teach "oil painting in ten lessons by mail." Under the name of "Tangley Institute," Baker was broadcasting "to let the world know that varicose veins could be cured without operation." The Tangley Institute went out of existence when the "Baker Hospital" was opened.

From the evidence in the case, it appears that Baker's original intention was to make some financial arrangement with Ozias of Kansas City, whereby the Ozias "injection cure" for "internal" cancer could be used at Muscatine. Such plans, however, never materialized and Ozias testified that he had never sold, loaned or permitted Baker to use the formula. Baker was asked, when on the witness stand, who it was that told him what was in the Ozias mixture; he replied: "I refuse to tell." It was a fact, however, that two persons previously connected with Ozias in the exploitation of the Ozias "cure" were hired by Baker. One of these was a woman, Mary Turner, and the other a chiropractor, Charles Gearing. The Turner woman admitted that she had given thousands of injections of the Ozias "cancer treatment" while in the employ of Ozias; she was employed by Baker to do the same kind of work when she came to Muscatine. Mrs. Turner had no medical training and was not even a registered nurse!

THE FIVE TEST CASES

Baker, on the witness stand, admitted that he broadcast over his radio station that he was going to investigate a cure for cancer (the Ozias "treatment") and that he "wanted five men or women from any part of the United States or Canada who were suffering from cancer to consent to become a test patient for this treatment, that I would pay all of their expenses for them, all doctor bills, nurses' care, medical fee, room and board,

1. The Hoxide Cancer "Cure," J. A. M. A. **86**: 55 (Jan. 2) 1926. The Hoxide Quackery Again, ibid. **93**: 400 (Aug. 3) 1929.

2. The Ozias Hospital Association, J. A. M. A. **79**: 1869 (Nov. 25) 1922.

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and they to pay their own transportation to the hospital [in Kansas City, Mo.] where the treatment would be made." It developed that, as a matter of fact, most of the "test patients" paid their own expenses both in transportation and in fees to Ozias. These "test cases" were dealt with extensively in Baker's *T N T Magazine* and the matter was sent out as a reprint, because, according to Baker, the copies of his magazine containing the material had been sold out. The article was headed in black-faced type, "T N T Magazine Investigation Proves That Cancer Is Curable." The article in question started as follows:

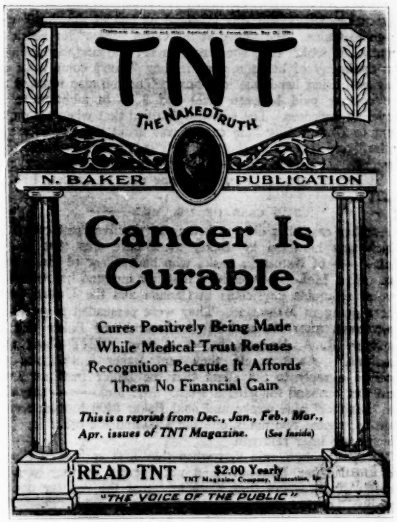
> "Cancer is conquered. The greatest discovery in medical science in years—a positive cure for cancer, that dread disease which has taken toll of millions of lives, caused thousands to commit suicide and driven other thousands to insanity—has been revealed by an investigation conducted by Norman Baker, publisher of T N T magazine and owner of the Norman Baker Enterprises and radio statition KTNT, who was assisted by a physician and member of his staff.
>
> "Seeing is believing. Mr. Baker and his fellow investigators have seen with their own eyes enormous and malignant cancers in advanced stages of growth rapidly yield to a new and painless treatment, soften and disappear. They selected the cancer cases themselves for observation after they had determined beyond any doubt that they were authentic cases of cancer. They have watched these true cases of cancer under treatment and have seen the cancers grow smaller and pass away."

Baker then went on to state that "painstaking observation" of the cases that had been selected for the test had "thoroughly convinced Mr. Baker that cancer has been conquered." The article then goes into detail regarding the five test cases, reproducing photographs of the individuals concerned. Here it may be interpolated that all five of the patients are dead and were dead for some some time before Baker ceased reprinting his article to prove that "Cancer Is Conquered."

Test Case No. 1.—Mrs. T——— was one of the widely advertised "test" cases. Mrs. T——— was taken to Ozias' place in Kansas City by her daughter-in-law, who testified that when they got there, they met Mrs. Turner, who, at that time, was employed by Ozias. Mrs. T——— stayed at the Ozias "clinic" from July, 1929, until September of the same year, and she paid $105. According to Baker's announcement, Mrs. T——— was "suffering from a very bad abdominal cancer" and had been given up by physicians as incurable. Following the Ozias "treatment," according to the Baker report, she began a "rapid recovery" and the "cancerous mass in the abdomen had softened and most of it had passed away." The article added that "only a small amount of cancerous growth" was left and this "no doubt will be eliminated when she resumes the treatment." The facts developed in the trial showed that Mrs. T———, when she returned from Kansas City in September, was practically bedfast, and she died a few weeks later—in November, 1929. This case, heralded by Baker as one of the five "test" cases, was published first in the December issue of *T N T Magazine* and the matter was reprinted and distributed as late as June, 1930—more than half a year after the poor woman had been in her grave!

Test Case No. 2.—Another of the "test" cases was that of Mr. De C———, who had cancer of the throat. Reputable surgeons to whom he went, while not holding out any hope of cure, suggested, as a palliative treatment to prolong his life, the surgical removal of the vocal organs. This he refused and came to Baker. The Baker magazine stated, in describing the case, that "it was believed that three months' treatment would be required to completely cure him" and reported, further, that after treatment Mr. De C——— "went back to work at his trade." The case was reported in detail in a Baker reprint that was sent out in June, 1930—six months after Mr. De C——— was dead and buried! Mrs. De C——— testified that her husband, a laborer, paid $500 for the two months that he was in the Ozias "clinic" at Kansas City. She was asked if it was not a fact that Baker told her, at the time, that he (Baker) would take care of the expense of Mr. De C——— going to Ozias. Mrs. De C——— replied: "Well, he said if he got somebody to send up there, he would pay all of the expenses, but he didn't pay anything. I paid my expenses myself." After his stay at the Ozias "clinic," Mr. De C——— came back to Muscatine, having learned that the Turner woman, previously an employee of Ozias, was now employed by Baker. He continued to take "treatments" in Muscatine, the injections being given by Mrs. Turner. He was there about two and one-half weeks and was charged, according to the testimony, $137.50. Mrs. De C——— testified that Mrs. Turner told her, at the time she went to bring her husband back home, that there was nothing to fear from the cancer "because he is cured, but there is only one thing; his windpipe bothers him and all you will have to do, you go home with him and put some onions on his windpipe. That is all you will have to do."

Test Case No. 3.—This was that of Mr. D———, which was described in Baker's magazine and reprints as that of a patient who had had an exploratory operation by reputable physicians, which disclosed the fact that the case was inoperable. Mr. D——— went to Kansas City to take the Ozias "treatment" in September, 1929, and remained there seven weeks. Mrs. D———, who was called as a witness by the American Medical Association, declared that after Mr. D——— came back from Kansas City he was unable to keep any food down; "he always vomited it up." On his return to Muscatine, the "treatments" were continued until the last part of October or the first part


TNT
THE NAKED TRUTH
N. BAKER PUBLICATION
Cancer Is Curable
Cures Positively Being Made While Medical Trust Refuses Recognition Because It Affords Them No Financial Gain
This is a reprint from Dec., Jan., Feb., Mar., Apr. issues of TNT Magazine. (See Inside)
READ TNT
$2.00 Yearly
"THE VOICE OF THE PUBLIC"

of November, when Gearing and the Turner woman refused to continue them. Mr. D——— died, Dec. 28, 1929. Mrs. D——— asked that a necropsy be done on her husband's body, because Baker had claimed that, in addition to suffering from carcinoma, Mr. D——— was suffering from tuberculosis. The necropsy showed that Mr. D——— had no tuberculosis, but cancer. Baker, in his write-up of this "test" case, said:

> "At this writing the cancer which originally covered practically the entire abdomen has been reduced to a lump about the size of a small walnut. It seems certain from his present condition that the treatment will not only cure his cancer but will free him entirely from tuberculosis."

When it was obvious that Mr. D——— would not live much longer, the Baker "institute" refused to give further "treatments," and Mrs. D——— testified that Baker claimed that the reason her husband was not getting well was that he was not taking enough exercise. When Mrs. D——— was asked about this she replied: "How could he exercise when he didn't have any strength to exercise with? One of us had to get on each side of him to make him walk a few feet." Another alibi that Baker attempted to use in this case was that Mr. D——— was smoking too many cigarets. Mrs. D——— declared that her husband had been unable to smoke cigarets since the time he had the exploratory operation and before he ever even went to Ozias or Baker.

Test Case No. 4.—Another of the "test" patients was Mr. J——— of Kansas. Mr. J——— had cancer of the jaw; he had been operated on and given radium irradiations by reputable physicians, who could hold out no hope of permanent cure. Following the operation he went to the Ozias "clinic" as one of the "test" patients. He remained in Kansas City from September, 1929, to March, 1930, and paid out between $700 and $800 in addition to his transportation expenses. In one of Baker's reprints, sent out at late as June, 1930, it was stated regarding Mr. J———:

"At this writing the patient has recovered sufficiently to begin to worry over the fact that due to the operation he is destined to go through life disfigured. He keenly feels that had he known about the treatment sooner he could have saved both his life and his face from disfigurement. On this account, he harbors considerable resentment towards the doctors who performed the operation."

When this reprint was issued, Mr. J——— had been dead more than a month! He died, May 5, 1930.

Test Case No. 5.—Mrs. N——— of Illinois was still another of the five "test" case patients. Mrs. N——— had cancer of the right breast. Having heard Baker broadcast, she went to Muscatine, where she was accepted as one of the "test" cases to go to Ozias. She stayed at the Ozias "clinic" for about two months, at which time she wrote to her husband, according to the testimony of her son, that if they "didn't come after her, they will bring her home in a box." The son also testified that the mother paid between $250 and $300 in addition to her traveling expenses. The son also testified that when his mother went to Kansas City "the cancer was about the size of a half-dollar," and that when she returned "it was two or three times bigger." The Mrs. N——— "test case" was being reported by Baker as late as June, 1930; she died of cancer, Feb. 25, 1930!

THE CASE OF MR. MCL———

Another case that did not belong to the five "test cases" but which was heralded by Baker as a cure was that of Mr. McL——— of Kamsack, Sask., who had cancer of the esophagus. Mrs. McL——— testified that her husband had consulted several reputable physicians in Canada and the United States before going to Muscatine. They were persuaded to go to the Iowa town after she and her husband heard Baker and his manager, R. A. Bellows, broadcast over KTNT about their "institute." As a result, they sent Baker a telegram and received a reply to the effect that the Baker Institute would treat her husband for $100 a week. Mr. McL——— stayed at the "institute" nine weeks and paid Baker $400 in cash and, in addition, signed two notes, one for $280 and the other for $200, which were later returned.

Mrs. McL——— said that when they first arrived in Muscatine the "Baker Hospital" had not opened, so they went to Baker's store, where they were told that the "cancer doctor" was out but that they could see him later. This "doctor," it later developed, was chiropractor Gearing. Mrs. McL——— worked in the Baker establishment while her husband was there, in order to help reduce the expense to which they were put. She testified that while she was given a job as a nurse at $25 a week, the price Baker was charging her husband was immediately raised from $100 a week to $125 a week! She protested at this and called attention to the fact that other patients were receiving treatment at $50 a week. Not until Mrs. McL——— threatened to give the facts to the newspapers did the Baker concern reduce the rates for her husband to $85 a week.

Mr. McL——— finally got so weak that he had to be taken back to Saskatchewan. Mrs. McL——— further testified that one night after their return and but a short time before her husband died, they happened to turn on the radio and heard Baker, over KTNT, say: "Hello, Kamsack, Canada. Hello, Mr. and Mrs. McL———, how are you?" Baker then went on to describe Mr. McL———'s treatment at the "institute" and told how he had been sent home cured, how he was able to eat solid food, and how Mrs. McL——— had written to Baker, stating that her husband "was coming along fine." The facts were, according to Mrs. McL———, that she never wrote to Baker after returning to Kamsack, and that her husband had *not* been able to eat any solid food since leaving the "institute." Mr. McL——— died, April 12, 1930.

It was brought out in Mrs. McL———'s testimony that at the time she and her husband left the Baker Institute, Mrs. Turner, who with chiropractor Gearing had been giving the injections, gave her a small bottle of the injection fluid, with instructions that should her husband need it, she should get a nurse to administer it, but under no circumstances allow it to get into the hands of a physician. Mrs. McL———, however, turned over the specimen to her family physician, Dr. C. E. Tran, who later gave it to Mr. Edward M. Burke, defense counsel. Mr. Burke deposited half of the liquid with Dr. Paul Nicholas Leech, director of the A. M. A. Chemical Laboratory, and half with Dr. Wilber J. Teeter, dean of pharmacy at the State University of Iowa, with the request that both men analyze the material. Later, both Dr. Leech and Dr. Teeter testified that their analyses of this liquid disclosed that the product was essentially one-third carbolic acid (phenol) in a mixture of glycerin and alcohol, with a trace of oil of peppermint.

THE OPEN-AIR SHOW

One of Baker's advertising stunts was characteristic of a man who had been in the "show business." He broadcast that the Baker Institute would hold an open-air meeting at Muscatine, where it would be demonstrated that both external and internal cancer was curable by the Baker methods. In the June issue of *T N T Magazine*, it was claimed that 32,000 people attended this meeting. In the same issue he purported to describe some of the "wonders" that were shown at that time. One of the more spectacular was thus described:

"Most amazing and remarkable of all, the entire top portion of the skull of a patient almost in the last stages of cancer was removed and held up for exhibition by the physician before the gasping throng exposing the brains of the entire top of the patient's head."

This was the case of one M——— J———. Large-sized reproductions of photographs were published in *T N T Magazine*, one showing Mr. J——— "with bare skull bone exposed," another showing one of Baker's hired men "just after he had administered treatment and removed skull exposing brain," and a third showing what purported to be a "close-up view of brain of M——— J———" and the alleged "cancerous growth which was eating his life away." Investigation brought out the fact, obvious to any physician, that the man never had cancer but did have an osteomyelitis. The condition was treated by Hoxsey at the Baker Institute and, while there, the outer layer of the skull was, as the patient put it, "just pried off." What the gaping crowd saw at the "demonstration" was not the man's brain, as reported by Baker, but the medullary portion of the skull.

THE CASE OF MRS. MC M———

The case of Mrs. McM——— also carried some interesting high-lights. Mrs. McM——— had cancer of the esophagus diagnosed by reputable surgeons as inoperable. After hearing Baker over the radio telling of the cures that were being performed, she and her husband went to Muscatine, where they met chiropractor Gearing and Mrs. Turner. The day before Mrs. McM——— died in the Baker Institute, according to the testimony of her husband, another of the alleged doctors of the "institute" examined her and "said she was all ready to go home, and he told Mrs. Turner her heart was good and her cancer was all gone and she could go home and build up quicker than she could there." Mrs. McM——— died the next day! Mr. McM——— had paid $800 in cash for three months' treatment and had been told that if his wife did not receive any benefit the Baker Institute did not want his money. In spite of the fact that the poor woman died after being in the "institute" only a little more than sixty days, it was necessary for Mr. McM——— to employ an attorney to get a refund.

THE CASE OF MRS. W———

Mrs. W——— went to the Baker concern for cancer of the breast. Her husband testified that she went to Baker because she had a horror of surgery. This point is worth emphasizing for reasons that will appear later. They first saw Bellows, the business manager, who, when he heard she had not had any treatment, operative or otherwise, said "that was fine." Later, they saw Baker, who, according to Mr. W———'s testimony, said: "One thing I am thankful for, folks; this is a virgin case. I am awfully glad you never let any other doctor tamper with it." Baker went on to state, according to the witness, that within a week or ten days, they could tell Mr. W——— whether

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they could cure his wife or not. They were charged $50 a week and the patient was put in a room containing "either six or seven" other patients. Mr. W——— testified that he saw Hoxsey treat his wife and, later, described how Dr. Statler, who is legally licensed to practice medicine in Iowa, also gave her treatments *under Hoxsey's direction!* The following excerpt from Mr. W———'s testimony on this point is enlightening:

"*Question.*—Did you see anybody else treating your wife in any manner at the Baker Institute?

"*Answer.*—Dr. Statler.

"*Q.*—What did you see him do?

"*A.*—Well, they had taken the Mrs. into his office one afternoon and laid her on a kind of a table that they had there and Hoxsey sat down on one side and Statler stood up right at about her shoulders and I stood back kind of between them and watched the performance. Hoxsey directed Statler as to what to do, where to make the incisions in my wife's breast.

"*Q.*—Did Statler do it?

"*A.*—Yes sir.

"*Q.*—What else happened there on that day, if anything?

"*A.*—As soon as Statler got through making the incisions, that is, it went so far, and I looked at him and I said, 'That is enough; stop it right there.' And at that Hoxsey and two of the nurses that were in the room left the room immediately. Statler and two more—I believe there was two—was still in there and they helped me take the Missus off of the table and put her in the wheel chair to take her back to her room.

And this, it is to be remembered, was the treatment given this poor woman who dreaded the knife—and it was given without any anesthetic! Mrs. W——— died in the Baker Institute a few days later.

SOME MORE CASES

There was the case of DeB———, a young fellow with a sarcoma of the leg. Testimony showed that he went to the Baker Institute, where he was told they could cure him in seven weeks and that it would cost him $75 a week. He stayed at the "institute" fifteen weeks and paid over $700. At the end of that time the young man's mother was told that they could do nothing further for the boy. She went to Muscatine and took him to his home in Rock Island, and the next day he was hurried to a reputable hospital, where an amputation was performed in the hope of prolonging his life. He lived for about six months and died, Sept. 2, 1930.

Mrs. H——— of Missouri had cancer of the breast. She was operated on by a reputable surgeon, who, according to the testimony of her husband, made it perfectly clear to them both that he could not be at all certain that it would not recur. Shortly after the operation, Mrs. H——— went to the Baker Institute at Muscatine, having heard Baker broadcast his "cure" over his radio station, KTNT. She went to the Baker Institute a few days before Jan. 1, 1930, and stayed there until the middle of February, paying about $340. At this time, she was discharged as "cured." She died of cancer, May 21, 1930!

Mrs. G———, who had an extensive carcinoma involving both breasts and both right and left axillary glands, went to the Baker Institute, Jan. 1, 1930. Her reason for going was expressed by the husband in his testimony, thus: "Mr. Baker talked over the radio and said he could cure cancer, no matter where it was located." Mrs. G——— was there, from Jan. 1, 1930, to March 12, 1930. After her return home, Mrs. G———'s condition became progressively worse; she died, July 23, 1930.

Mr. S———, a shoe repairer, had cancer of the pancreas and his family was told that, while some temporary relief could be obtained by an operation, he could not be cured. An operation was performed and Mr. S——— went back to work on the first of November, 1929, and worked until the latter part of March, 1930, at which time he went to the Baker Institute, having heard Baker over the radio. S——— then asked Hoxsey, according to the testimony of his widow, "Well, can you help me?" and Hoxsey replied: "No, we can cure you." He died, July 21, 1930.

Many other cases similar to those just given were introduced by the American Medical Association, but space does not permit even the abstracting of them. Before closing its case, the American Medical Association put in evidence between twenty-five and thirty death certificates of patients who died at the Baker Institute. The Association also submitted seventeen death certificates of Hoxsey victims.

BAKER'S "EXPERTS"

When the time came for Norman Baker to submit testimony to rebut that which had been put in by the American Medical Association, he called to the stand certain alleged experts. The first of these was E. M. Perdue, M.D., of Kansas City, Mo. Perdue qualified as an "expert" on cancer by stating that he had done special research at Johnson's [3] Laboratory for Cancer Research at Kansas City, Mo. According to Perdue, the cancer cell differs from the normal cell in that it contains more water, and the way to kill cancer is to remove the water from the cancer tissue! This is done, said Perdue, by applying escharotics or by injecting "certain chemicals which substitute that water and take it out, and the cancer dies."

Perdue testified that he had never done any surgical work for cancer nor had he ever used radium or x-ray, and that he would use none of these methods of treating cancer. He said that he had used escharotics in the treatment of cancer and he submitted as an efficient formula, equal parts of powdered zinc chloride, powdered gum acacia, powdered sanguinaria, powdered galingal and powdered charcoal. According to Perdue, a product of this sort "deaquafies" the cancer, "taking the water out by substituting another chemical for it." Furthermore, according to Perdue's testimony, when escharotics are applied, they do not destroy normal tissue, because the cancerous tissue is selective. Perdue declared that the development of cancer was due to an increased alkalinity in the tissues of the person suffering from this disease.

On cross-examination it was brought out that Perdue not only approves of the Koch treatment for cancer, but of the Abrams "electronic" theory; further, that he is using, at the present time, what he described as the "Ellis machine," which is apparently one of the many imitations or modifications of the Abrams device. George Starr White [4] is a personal friend of his, said Perdue, and has taught him "lots of things in diagnosis." Perdue testified that he studied law at the same time that he studied medicine; that he began the study of medicine at the Kansas City Hahnemann Medical College and that he taught histology, anatomy and dissection at the same time. "I was a good anatomist," he admitted, and when asked where he learned his anatomy, he said that it was part of his course in the Kansas Normal College. He claimed, also, to have gone to the Eclectic Medical University of Kansas City. It was brought out that although Perdue has for years been practicing in the State of Missouri, he holds no license from the state board of that state; he claims that he has a right to practice because he had been in practice twenty years prior to the time that the law went into effect. Perdue also claimed to be a civil engineer and a chemist; to hold the degree of M.D. from two schools—one homeopathic and one eclectic; to have the degrees of Doctor of Public Health from the Eclectic Medical University of Kansas City. He also took "courses" in osteopathy and chiropractic in Kansas City schools now out of existence. He claimed to be an authority on mixing concrete and declared, under oath, that he had "superintended millions of dollars' worth of public work," having laid miles of asphalt paving. He did this civil engineering in the "summertime, between the school sessions."

Another Baker "expert" was J. W. Seip, M.D., of Erie, Pa. Dr. Seip is seventy-two years old, a graduate of Jefferson Medical College, 1883, and licensed to practice in Pennsylvania. Dr. Seip admitted that his practice, up until the time of the world war, had been largely general, but "since then, it has been more psychologic and chronic diseases." He said that he "had never done much of any research work on cancer" but, nevertheless, it was his expert opinion that cancer resulted from the "present devitalized condition of our diet" by which "we rob our blood of its known necessary twelve tissue salts." Dr. Seip further was of the opinion that persons suffering from cancer were nearly all "shallow breathers" and that they were the people who were "living on white bread depriving themselves of the salts of our tissues, which are mainly in bran." He declared: "One reason why cancer is so prevalent today is because people eat white bread, and the whiter the bread, the

3. The Johnson cancer concern is dealt with in the pamphlet "Cancer Cures and Treatments" issued by the Bureau of Investigation of the American Medical Association.

4. See article: "George Starr White—Quack," THE JOURNAL A. M. A., April 13, 1929.

sooner you are dead." The doctor said that in his own treatment of cancer his "principal reliance is upon the Koch antitoxin." The Bureau of Investigation has in its files advertisements from Erie (Pa.) newspapers of eight years ago, reading as follows:

ERIE'S ONLY
Permanent Office Specialist
For Chronic Diseases

Cures high blood pressure, rheumatism, neuralgia, varicose veins and ulcers, scars and strictures, hemorrhoids, weakness, debility, nervousness, etc., without pain.

Hours: 1 to 4 and 7 to 9 P. M.
DR. SEIP
1031-33 State Street.

A third "expert" called as a witness by Norman Baker was Bruce Miller.[5] He testified that he was graduated in 1886 by the College of Physicians and Surgeons, Chicago; that he was "out of practice for quite a number of years" but that in 1926, he went to Taylorville, Ill., where he was connected with Harry Hoxsey and his "Hoxside Institute." He practiced for a short period right after graduation and then worked in a factory and as a paper-hanger from 1891 to 1898; that he then "built up quite a large orchestra of ladies, dummies, in connection with a pipe organ" and went to Europe, where he took his "dummy" troupe and exhibited his "automatic orchestra." He was in Europe from 1899 to 1906, when he returned to the United States and entered the real-estate business, in which he continued until about 1918. Dr. Miller testified that the only treatments he administers for cancer are escharotics and that he does not attempt to treat any cases of "internal cancer," although he admitted that cases of that kind were accepted and the patients were given narcotics to make them comfortable.

The fourth "expert" called by Norman Baker was Harry Hoxsey himself. Hoxsey testified that he was thirty years old and that his education had not extended even through the eighth grade; he then worked as a coal miner and, in 1921, he started in the cancer-cure business at Taylorville, Ill. Hoxsey testified that he went to Muscatine with Norman Baker in March, 1930, and stayed at the Baker Institute until September 4, 1930, on a percentage contract basis. He admitted that he treated many patients and even used the hypodermic needle and gave some injections. It was brought out on cross-examination what had been generally known through the newspapers—that Hoxsey and Baker had a disagreement. Hoxsey's explanation of leaving Baker was:

"I told Mr. Baker I refused to be a party any longer to bringing people there to take any other treatment only mine because he had shown no results with any other treatment on external cases and I would truthfully say not one, for I haven't seen one single case of external cancer cured there where the powder was not used."

He complained that Mr. Bellows, instead of sending the cases that come in for Hoxsey's powder treatment, would "consign them to the needle department where the intramuscular treatment was used." Hoxsey declared that he had sworn: "I have not seen one case of internal cancer leave that institution Baker Institute as cured that did not take my cancer treatment."

Following Norman Baker's "experts," there were put in evidence a number of alleged cases of cancer that were said to have been cured at the Baker Institute. Most of these were of a superficial type and those of the so-called internal type were not satisfactorily diagnosed as cancer. Baker put on the stand some of the individuals who were alleged to have been cured and, at the same time, presented photographs of the "before-and-after" type as confirmatory evidence. Incidentally, during the closing days of the trial, the United States Marshal took a loaded .38 automatic pistol from Norman Baker. Baker's excuse was that he had a permit to carry one, but he was informed that his permit did not extend to the federal courts.

THE CLOSING ARGUMENTS

In the final arguments, Mr. Dutcher, for the American Medical Association, made no attempt to soften the charges that had been made in THE JOURNAL and *Hygeia* regarding Baker. "We called Baker a quack and we are not here to apologize for it," Mr. Dutcher declared. He brought out, further, that the State of Iowa had enjoined Baker from practicing medicine without a license and that the Federal Radio Commission had revoked Baker's broadcasting license, because it found that his operation of the station was inimical to the public interests. He reviewed the history of the five "test" patients that Baker had sent to Ozias at Kansas City, Mo., and emphasized the fact that they were all dead at the time that Baker was declaring, either directly or by implication, that they had been cured. Mr. Dutcher maintained that there was not a single case in the record of the trial in which the Baker Institute could even claim to have cured a case of cancer with its hypodermic injections. Counsel also referred to the fact that Hoxsey and Gearing, neither of whom had any medical training, were known as "Doctors" at the Baker Institute.

Mr. Dutcher also asked why Gearing and Dr. Ozias and numerous other doctors who had been connected with Baker, had not been called by Baker to testify in the case. As Mr. Dutcher stated, not a single M.D. who was associated with the "institute" before the date of publication of the alleged libelous articles had been called to testify, except Dr. Statler, who still had a job there. He dwelt on the evidence in the records showing that Statler once cut a woman's breast under the direction of Hoxsey and that in another case, Hoxsey himself cut the breast and the patient died five days later. Mr. Dutcher also dwelt on the case of the young Iowa farmer, who, suffering from what he thought might be cancer, went to the Baker Institute, where Hoxsey started to "treat" him. Not being satisfied that the Baker Institute knew much about his case, the young man went to the State University of Iowa's Dermatologic Clinic, where they found he was suffering from "barber's itch"! This case, as some of our readers may remember, was the subject of a brief article in this department of THE JOURNAL for July 26, 1930.

Baker's attorneys, in their closing speech to the jury declared that the American Medical Association was malicious in attacking Baker and that it had no right to attempt to interfere with Baker's business or injure his reputation.

The case went to the jury as the court closed on the evening of March 2; the jury was out for a few hours that evening before adjourning for the night. They returned to the jury room at nine o'clock the next morning, and at 10:50, a ballot was taken and the vote was unanimous for the American Medical Association. Their brief formal report to Judge Nordbye was: "We, the jury, find for the defendant."

5. Bruce Miller is discussed in the article, "The Hoxide Cancer Cure," already referred to.

Correspondence

NUTRITIONAL ANEMIA

To the Editor:—In THE JOURNAL, February 20, page 660, appeared a communication by Prof. E. B. Hart of the Wisconsin Experiment Station relating to the work of Beard and Myers (*J. Biol. Chem.* **94**:71-146 [Nov.] 1931) on the nutritional anemia of the rat. Since this article contains some statements that are misleading and incorrect, I feel it my duty to give the facts in order that erroneous opinions of our work may be corrected.

In the first paragraph it is stated that the work of Beard and Myers has added to the confusion [of nutritional anemia of the rat]. But that confusion will disappear, I am sure, if one turns to page 74 of the November, 1931, issue of the *Journal of Biological Chemistry*. Under the caption "Milk Used," one will read that the milk that they used was "poured through about five feet of copper pipe into a large nickel cooler" and that this milk contained 0.44 mg. Cu per liter." Let us now examine this statement and see whether it has any bearing on the results that we have already published on the question of the nutritional anemia of the rat.

The reader gets the impression from this statement that our positive results were due to the copper contamination of our milk. That the Wisconsin investigators should hold this view

is evident from their publications in this field. Our milk was poured through 5 feet of copper pipe which had a diameter of about 5 inches. This pipe extended from the top to the bottom of the cooler. The time that any given quantity of the milk would be in contact with the metal was thus only a few seconds. Furthermore, milk must be heated to a fairly high temperature before it will take up any metal from a container. Thus it was impossible for our milk to take up any copper from this pipe. Identical results were obtained with milk that never came in contact with any metal. Our milk contained 0.44 mg. of copper per liter. We obtained recovery with pure iron. Hart's milk contained 0.32 mg. of copper per liter and no recovery with pure iron was observed. The difference in the copper content of these two milks was 0.12 mg. per liter, or 0.006 mg. per 50 cc. of milk, which would be consumed daily by a young rat. We have shown that this amount of copper, even if it were all absorbed, cannot have any supplementing effect with iron. In from 35 to 75 cc. of milk daily the Wisconsin rats would be receiving from 0.01 to 0.02 mg. of copper, yet no recovery was obtained with this milk when pure iron was added. It required 0.0025 mg. of copper to show a supplementing effect with iron. The amount of copper *in the milk* and that *in the tissues* of the rat are very different things from the metabolic point of view. We have also shown that there is a *minimum daily dose* of copper that is effective with iron and that doses below this will have absolutely no effect. If it was the copper content of the milk that was giving our effect, why did we get such an accelerated effect when 0.025 mg. or copper was added to the milk-iron diets? This point was fully discussed on pages 99 and 100 of the article by Beard and Myers, where evidence with thirty-three anemic rats was given. This evidence showed that our milk did not contain 0.025 mg. of copper daily (our lowest effective dose).

Reference was also made to the fact that Keil and Nelson (*J. Biol. Chem.* **93**:52 [Sept.] 1931) used milk containing 0.44 mg. of copper per liter, but on reference to this article on page 93 it is seen that their milk contained from 0.35 to 0.44 mg. of copper per liter. Thus it is just as logical to accept the first figure as the last here. On this milk Keil and Nelson obtained recovery with pure iron, while the Wisconsin group could obtain no recovery with iron when their milk contained 0.32 mg. of copper per liter. When both groups of investigators used milk containing about 0.23 mg. of copper per liter there was no effect when iron was added. One-tenth mg. of copper per liter is equivalent to 0.005 mg. for each 50 cc. of daily milk intake, an amount obviously too small to exert any effect. Thus it is evident that the copper content of milk does not have any bearing on our experimental results.

Reference was made to our work with rats 196-256, in which our milk never came in contact with any metal whatever. We omitted the copper determination of this milk since it gave identical results with our other milk. It was also stated that "their published records show that it was never used with Fe as the only supplement, but only with Fe and Zn." On page 78 of our paper, this statement will be found: "95 anemic young rats fed daily on 0.5 mg. Fe . . . These rats were used as litter mate controls for the experimental animals given in our Paper II" (which contained data for above rats). Suffice it to say that eighteen of these animals were fed on iron alone, with hemoglobin recovery in six weeks, while the rest of them received other supplements with iron, with hemoglobin recovery in three weeks. Results for duplicate groups of rats fed on the same supplements will be found in the tables on pages 95-97.

Elvehjem and Hart (*J. Biol. Chem.* **95**:369, 1932) still infer that our iron solutions contain copper as an impurity. Since we used the hydrogen sulphide filtrate of iron after filtering off the sulphides and removing the gas, with fully 60 per cent of our animals with exactly the same results as with our original iron solutions, it is clearly seen that there is no ground for this continued criticism of our work. If copper is specific in nutritional anemia, how can one explain the positive results of several investigators with pure iron alone? No one will deny the catalytic effect of copper with iron, but there are both experimental and clinical investigators who do not agree that copper is specific in anemic states. Furthermore, Foster (*J. Nutrition* **4**:517 [Nov.] 1931) has shown that irradiation with a quartz mercury arc has a slight but definite effect in increasing the hemoglobin content, number, size and saturation of the red cells in nutritional anemia of the rat. I have, in a preliminary study, confirmed this effect on the recovery in cells.

All the points of technic, and many others, mentioned in the last paragraph were very carefully studied by us in Cleveland and none of them had any effect on the outcome of the experiments.

H. H. BEARD, PH.D., New Orleans.

DIPHYLLOBOTHRIUM LATUM

To the Editor:—In the article on Diphyllobothrium latum (THE JOURNAL, January 23, p. 312) the author states that no cases have previously been reported in the literature from New York.

I reported a case of Diphyllobothrium latum, or Bothriocephalus latus, infestation (the terms are identical) in 1926 from New York City, which appeared in the *Medical Journal and Record* (**124**:536 [Nov. 3] 1926). This paper was further abstracted in the Current Medical Literature department of THE JOURNAL (Jan. 8, 1927, p. 127).

My paper reviewed the literature thoroughly and discussed the theories as to the cause of the anemia arising in this condition. As at that time there were no data on blood changes available, rather elaborate blood studies were undertaken which, although negative, it was hoped would serve as a point of departure for future investigations.

THEODORE ROSENTHAL, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PHYSIOLOGIC STERILITY AND CONCEPTIVE CAPACITY

To the Editor:—What is definitely known as to periods of physiologic sterility and conceptive capacity in women? I have read conflicting statements. HENDERY ALLISON, M.D., Kingsville, Texas.

ANSWER.—It has long been maintained that there exists in women a definite period during each month when conception may take place and other intervals when impregnation is impossible. Most of the individuals who are of this opinion are physiologists and anatomists, whereas those who maintain that women may conceive at any time during the menstrual cycle are essentially clinicians. The one who has done most during the last few years to attempt to prove that there is a physiologic period of sterility is Knaus. By means of ingenious and elaborate experiments he has come to the conclusion that in women with a twenty-eight day cycle there are definite periods of sterility, each month. There are two classes of women who have a four week cycle. One group shows a tendency to a slight diminution in the interval and they menstruate every twenty-six to twenty-eight days. These women, according to Knaus, can conceive only from the ninth to the fifteenth day of the cycle. The second group has a tendency to have a longer menstrual interval, which usually varies from twenty-eight to thirty days. These women are susceptible of being fertilized only from the eleventh to the seventeenth day of the cycle. The relatively few women whose menses vary between twenty-six and thirty days can conceive only from the ninth to the seventeenth day of the cycle. At all other times during the intermenstrual interval, fertilization is impossible. Hence Knaus suggests that the ideal method of contraception is temporary abstinence during the intervals when conception is possible. He has devised an ingenious combination of three circular disks by

means of which any woman with a twenty-six to thirty day interval may determine the exact days each month when conception can take place. Knaus's chief reason for his belief in physiologic periods of fertility in women are that: 1. Since spermatozoa lose their power of fertilization after forty-eight hours and since ovulation does not occur until about the fourteenth day, coitus during the first ten days of the cycle cannot result in conception. 2. If we agree with Grosser that a minimum of ten days is required for the wandering period of an ovum, it follows that, in women with a twenty-eight day cycle, ovulation and conception must occur together approximately on the fourteenth to the sixteenth day of the cycle so that implantation may occur and prevent the onset of menstruation.

Many individuals take issue with these statements. First of all, some women ovulate as early as the ninth day of the cycle and hence are susceptible of fertilization on that day or even earlier. Secondly, there appear to be authentic records of a single coitus during the intervals that are supposedly sterile, nevertheless with the occurrence of conception. Of course, many women have good reasons for not telling the truth about these matters and sometimes their memory is at fault; hence not all of these cases are reliable. Theoretically a woman is capable of conceiving only for a short period of time after ovulation; that is, some time between the tenth and the nineteenth day of the menstrual cycle. This is due to the fact that an ovum is susceptible of fertilization for only a few hours and the spermatozoon's capability is not much longer. (The fact that a spermatozoon is motile does not necessarily imply that it is capable of fertilization.) It seems that some women, at least, may conceive at any time in the menstrual cycle even during active menstruation. Far more data are necessary before this question can be settled definitely in human beings. Perhaps the intensive studies being made on monkeys will shed a good deal of light on it. Thus far it seems that monkeys do have a distinct physiologic period of sterility.

OTOSCLEROSIS

To the Editor:—A man, in 1917 at the age of 21, had a bilateral 20/20 hearing. After that time he was more or less continuously exposed to cold and damp weather, whereas before he had led an indoor life. In 1918 a bilateral tinnitus developed, on the left side more than the right, and in 1919 he became noticeably hard of hearing, particularly in the left ear. The condition was diagnosed as bilateral chronic catarrhal deafness. He became progressively more hard of hearing with increased tinnitus, so that in 1928 and 1931 a definite diagnosis of otosclerosis was made. While the etiology of otosclerosis is not clear, would it not be reasonable to assume, first, that the cold and damp weather was an aggravating factor in producing the otosclerosis; second, that the tinnitus was the presenting symptom of otosclerosis; third that, since it is known to be difficult to differentiate between chronic catarrhal deafness and incipient otosclerosis, the definite otosclerotic condition which appeared at the later date was in fact the underlying condition present but unrecognized during the entire period? Please omit name. M.D., New York.

ANSWER.—The exact etiology of otosclerosis or, as it should more properly be named, spongification, is not definitely known. In the typical cases there is a partial or complete ankylosis of the foot plate of the stapes in the oval window and this carries with it loss of hearing for low tones, prolonged bone conduction and a negative Rinne reaction; namely, bone conduction longer than air. When spongification appears in the bony capsule of the labyrinth at points elsewhere than at the oval window, degenerative changes occur, with signs and symptoms of impairment of the inner ear or perception apparatus. In these cases there is loss of hearing for the high tones, diminished bone conduction and a positive Rinne reaction with air longer than bone, but both factors shorter than the normal. However, in cases in which there are changes both in the oval window and in other portions of the labyrinth there is a combination of signs and symptoms that makes the exact diagnosis difficult. In a typical otosclerosis there is usually an hereditary factor and the disease begins to manifest itself quite early in life. It is doubtful whether, in the case cited, otosclerosis was really present because the patient apparently had normal hearing at the age of 21, and then following exposure there developed what apparently was a bilateral tubal involvement, which became progressively worse. If a true otosclerosis had been present, no doubt symptoms would have presented themselves at the age of puberty and become progressively worse. Otosclerosis itself is not supposed to be caused by any acute or chronic infection of the middle ear, but infections or disorders combined with an otosclerosis naturally make the hearing still worse. Tinnitus is one of the most striking symptoms of otosclerosis, but it may be due to many other conditions. Unless the typical tuning fork and other signs are present together with a history showing factors such as heredity, sex and pregnancies (which of course would not apply in the present case), the diagnosis is difficult to make. In this case it seems unlikely that an otosclerosis was present, for it could hardly have existed such a long time before making itself manifest.

SEQUELAE OF IRRADIATION OF THE THYROID

To the Editor:—A woman, aged 50, during the period from 1915 to 1920 received sixty roentgen treatments for the purpose of decreasing a thyroid activity. Soon after the last treatment was taken, she noticed the formation of superficial scar tissue about 4 inches in diameter and lying immediately over the anterior lower thyroid and upper sternal region. This scarred area is infiltrated with numerous small capillaries, giving the area a reddened appearance. Can you suggest any kind of treatment that may aid in the absorption of this scarred tissue and the disappearance of the superficial capillaries? Please omit name.

M.D., Michigan.

ANSWER.—Scar formation with telangiectatic dilatation of skin capillaries is a not infrequent result of overdosage of radiation over the thyroid for the control of hyperthyroidism. It may be an early or indeed a late development, not appearing for several years following irradiation of the area. There is no known effective treatment for such untoward results save skin grafting, which, under the circumstances and in this location, constitutes a formidable procedure and would be indicated only when the scar in itself produces disability. While disfigurement, as in this case, is an unfortunate result, it probably would only be aggravated by radical measures. Incidentally, the amount of x-ray exposure used in such procedures should be exactly measured. Such factors as the quality of the x-rays employed, penetration, screening, length of exposure and extent of skin surface exposed to the rays should be accurately estimated and controlled. The statement that sixty roentgen treatments were employed implies lack of understanding of the principles involved. Under the circumstances a frank explanation of these facts to the patient and the statement that during the period from 1915 to 1920 the importance of these matters was not as well understood as it is today may clarify the situation. It is likely that little or nothing could be done at the present time to relieve the patient from this unfortunate result.

EDEMA IN ONE LEG

To the Editor:—A woman, aged 56, recovering from bronchopneumonia, has old diabetes mellitus and nephritis. The urinary sugar is 1.8 per cent.; albumin, 2.1 Gm. per thousand cubic centimeters; casts, 1 granular; specific gravity, 1.024. I cannot find a suitable diet for this condition. Also there is an edema of only one leg, the left. She shows no obstruction, pain or discoloration of the limb and feels well otherwise. Her heart is good. I cannot seem to find a reason for the edema in one leg.

SAMUEL S. SCHEFF, M.D., Union City, N. J.

ANSWER.—It is not easy to find a suitable diet for the combination which this patient shows. Usually some sort of compromise has to be adopted. A comparatively low proportion of protein, say 50 Gm., and a relatively high proportion of fat, seem to be the best combination. Usually edema of one leg is due to local disturbance of the blood vessels; after a bronchopneumonia the patient may have had a comparatively mild thrombophlebitis of the veins of the left leg with secondary edema and without any great amount of pain or discoloration. It is difficult to figure a renal edema being unilateral.

GLYCOSURIA IN PERITONITIS

To the Editor:—A man, aged 37, came into the hospital with a perforated duodenal ulcer of fourteen hours' duration, and there was a large amount of gastric contents in the peritoneal cavity, probably 2 quarts. The urine showed a strong reduction of Fehling's solution and in spite of about 350 units of insulin over a period of thirty-six hours the urine reduced the Fehling's solution just as strongly as before the insulin was given. Four hours before death he went into a coma, suggesting diabetes, and his death was distinctly due to respiratory failure. There was in the past history nothing to indicate a previous diabetes, he had passed an examination for life insurance less than a year before and he was employed by one of the large oil companies requiring yearly examination; he had no polyuria, no nocturia, and no excessive thirst. He was about 5 feet 11 inches (180 cm.) tall and weighed 150 pounds (68 Kg.). Facilities for blood sugar determination are not available here. In view of these facts the question arises as to whether a large amount of irritating material in the peritoneal cavity will so irritate the pancreas as to inhibit its secretion and prevent the proper metabolism of sugar to produce this condition. Please omit name.

M.D., Texas.

ANSWER.—According to present knowledge of the physiologic causes of sugar in the urine, peritonitis per se does not produce glycosuria. Theoretically the type of chemical irritation produced by a perforated ulcer, duodenal in particular, may in twelve or fourteen hours cause such damage to the pancreas

that it is no longer able to secrete insulin. Experimental and clinical observation, however, shows that acute pancreatitis is rarely associated with the presence of sugar in the urine. In this case two explanations are possible:

1. The patient had a latent diabetes, not discovered in the course of previous examinations. The perforation and subsequent peritonitis produced a toxicity that resulted in a lowering of the renal threshold, throwing out sugar in the urine; that is, a renal glycosuria.

2. The most probable explanation is that this was a case of suprarenal glycosuria with the following mechanism: The great amount of fluid spilled into the peritoneal cavity produced a direct or reflex stimulation of the sympathetic nervous system, which in turn affected the suprarenal glands and an abnormal amount of epinephrine was thrown into circulation, resulting in a mobilization of sugar from the glycogen of the liver and muscles. The blood sugar in this type of glycosuria becomes high and it is also refractory to insulin therapy.

TREATMENT OF EMPYEMA

To the Editor:—In THE JOURNAL, Dec. 26, 1931, Dr. Hedblom mentions the use of "acid pepsin solution" as recommended by Hermannsdorfer for the purpose of destroying necrotic materials in an empyema. A patient, aged 58, in whom an empyema (nontuberculous) developed one and a half years ago following a thoracotomy for a fibroma of the mediastinum, which was successfully removed, is still being drained. Surgical solution of chlorinated soda of 0.5 to 1.5 per cent has been used several times daily since its development by irrigation through a catheter. The cavity is of about 150 cc. capacity and permits the entrance of a catheter 9 inches long. On several occasions, small pieces of bone have been removed through the catheter by aspiration. It is safe to assume that other pieces of bone too large to be aspirated through a catheter still remain in the cavity. The patient is otherwise in good general health. Is the use of acid pepsin solution indicated? If so, please give in detail the technic for preparing and using this solution. Can the chlorine solution be safely used in conjunction with it or would physiologic solution of sodium chloride be indicated? Please omit name.

M.D., Illinois.

ANSWER.—If an acute empyema is treated by aspiration of the pus and irrigation of the cavity through a small tube, introduced through a stab wound, and fibrin interferes by plugging the tube, the fibrin may be dissolved by the introduction of acid pepsin.

A chronic empyema cavity that contains sequestered bone should be explored and all foreign material removed. Then a thoracoplasty may be done, or the thoracotomy opening may be sutured and irrigation continued. Eventually, it is usually necessary to mobilize the chest wall sufficiently to obliterate a residual cavity. Any empyema cavity treated by irrigation should be kept empty of pus all the time, which means thorough irrigation until the fluid comes back clear every two hours during the day and twice during the night.

PSYCHIC DISTURBANCE OR PHYSICAL CHANGE?

To the Editor:—Will you kindly advise me concerning the following case, as to a possible cause, prognosis, recurrence and treatment: A woman, aged 53, a trained nurse and medical missionary, suffered complete loss of memory from 7 a. m. to 1:30 p. m. The patient has been married for twenty years and has two sons, the younger 15 years of age. She lives at an altitude of 7,500 feet, 2 degrees south of the equator, works mainly with the Africans, has been here a little more than four years without a return to America, is tired much of the time and is nervous and irritable. At the time of the lapse of memory, her husband was away for just a few days on mission business. He is often away at times thus and there was no particular cause for worry. She wanted to know where her husband was and why he was away, though she knew all about it when he left; she kept saying the same thing over and over again, worried about herself and thought she was insane. A local physician told me that he has many such cases, especially in nervous women who may be physically normal otherwise.

M.D., East Africa.

ANSWER.—The facts given are not sufficient to justify a conclusion as to the nature and cause of the condition. The concomitant facts of fatigue, nervousness and irritability would arouse a suspicion of a functional or psychogenic disturbance, but it would be essential to exclude organic factors such as cerebral arteriosclerosis at this age. In view of the mode of life that is described, it is possible that the relative isolation and monotony, with the absence of familiar contacts and relaxations, may be important, particularly during the period of the climacteric; it is also possible that the altitude may play a part in one not accustomed to it. In some respects, except for the acute episode described, there is some suggestion of the attacks of depression that are not uncommon in the period of involution. Without more knowledge of the facts it is perhaps unwise to make suggestions concerning treatment, but the most obvious suggestion is that a period of vacation in more usual surroundings would be advisable.

CARMINE AS A FACE ROUGE

To the Editor:—Can you give me information about the toxicity and absorbability of carmine when used as a face rouge? Is it injurious to the skin? Please omit name.

M.D., Connecticut.

ANSWER.—Carmine is made from cochineal, derived from the dried bodies of insects that live on certain cactus plants. Cochineal has no proved medicinal or toxic properties and is used for coloring medicinal tinctures and many food products. The only possible harm that could come from carmine would be due to sensitization of the skin to it, which is unlikely but not impossible. The patch test might be tried on a patient's arm. Some carmine is dissolved in a little water, a small piece of cotton is soaked in it, and the cotton is fastened on the arm with adhesive plaster. A control test is made with cotton soaked in plain water or physiologic solution of sodium chloride. If, after forty-eight hours or less, there is found a patch of dermatitis under the carmine cotton and not under the control or under the adhesive plaster, the patient is sensitized to carmine. A negative result does not disprove sensitization, for it may be localized to small parts of the skin. The test should be repeated on the patient's cheek. If negative here, the irritation was not due to carmine.

INTERPRETATION OF DIAGNOSTIC TESTS FOR SYPHILIS

To the Editor:—I should like to know the exact interpretation of a negative Wassermann, positive Kahn and 4 plus Kolmer reaction as a blood reading in a Negress, aged 25. Is the usual antisyphilitic treatment indicated in this type of patient on the strength of the blood examination? Please omit name.

M.D., Arizona.

ANSWER.—A repeatedly positive Kahn and 4 plus Kolmer reaction must be interpreted as indicating the presence of syphilitic infection. It is assumed that yaws and leprosy are excluded from the diagnosis. Whether or not the usual antisyphilitic treatment is indicated is a purely clinical problem and cannot be answered without considering the various manifestations presented by the patient, especially as to the nature of the lesions and the existence of pathologic conditions that might render treatment inadvisable. Only a careful clinical study of a patient can enable one to decide this matter.

PREMATURE MENOPAUSE FOLLOWING IRRADIATION

To the Editor:—A woman, aged 26, because of intractable dysmenorrhea and metrorrhagia submitted to high voltage roentgen exposure of the ovaries on the advice of a gynecologist. Treatment was instituted at the beginning of April, 1931, and finished at the end of the same month. The menses promptly ceased. In July she began to manifest menopausal changes (hot flashes, irritability, nervousness and loss of libido). Is there any hope that this change is temporary and that the patient will menstruate once more? Is it possible for her to ovulate at this time without menstruating? Will the parenteral or oral administration of female sex hormone, theelin or amniotin relieve the distressing vasomotor instability? Can you offer any advice or therapy for this unfortunate woman? Please do not mention name.

M.D., New York.

ANSWER.—Small doses of x-rays or radium are approved by some leading gynecologists, but the majority are still reluctant to use this form of therapy in young women. The patient apparently received more roentgen therapy than was intended; despite this, there is a fair prospect that the ovaries will again become active. If there is a return to normal activity it will probably occur within a year or a year and a half. The remedies mentioned are worthy of a trial, although the results thus far obtained have been only fairly satisfactory.

PSEUDOREACTION IN SCHICK TEST

To the Editor:—I have two patients, girls about 8 years of age, who were Schick positive six months after toxin-antitoxin (Parke, Davis & Co., prepared with goat serum). The reaction was marked, probably 3 inches in diameter, red, swollen and indurated. They received another course of toxin-antitoxin. Now, a year later, their reaction to the Schick test is a hard, red swelling occupying two thirds of the volar surface of the forearm, quite tender, and after four days only beginning to recede. This second reaction to the Schick test is more severe than the first. Are they to be considered still susceptible to diphtheria? Should more toxin-antitoxin be given? Would this reaction be considered evidence of allergy? Please omit name.

M.D., Michigan.

ANSWER.—The reaction described is probably a pseudoreaction. As a rule a pseudoreaction develops quickly with more swelling than in the true reaction and fades quickly, disappearing usually in two or three days. The true reaction develops more slowly, reaches its height in two or three days, and fades gradually, so that some redness usually remains at the end of a week. The redness fades gradually, and finally

there remains a brownish area over which a slight scaling is common. There are instances in which the pseudoreactions are so confusing that it is difficult to decide whether or not a person is immune. In such cases, by means of the Römer test in guinea-pigs, it is possible to determine the amount of antitoxin in the individual's blood, and so to know whether this is at least 0.04 unit per cubic centimeter, which is needed for protection.

HAND DRYING LOTION

To the Editor:—Some teachers in an elementary school near here have asked me for a formula of a hand drying lotion to use, as they have to wash their hands so many times a day in water that is very hard.

ALICE S. CUTLER, M.D., Los Angeles.

ANSWER.—A drying lotion may be made of:

	Gm. or Cc.
Powdered tragacanth	2
Glycerin	
Alcohol	āā 25
Rosewater	ad 120

The tragacanth is shaken with the mixture of alcohol and glycerin, coating the inside of the bottle and the stopper. Then the rose water is added in very small amounts, the mixture being shaken vigorously each time until all has been added. The lotion is allowed to stand for twenty-four hours. A very small amount of this lotion rubbed on the hands while they are yet moist will tend to prevent drying. If too much is used, a temporary stickiness will be experienced which, however, disappears when the hands become dry. Other perfumes may be used as desired.

Should this mixture be found too dehydrating because of the amount of glycerin present, the following formula, which appears on page 45 of the Technic of Medication, published by the American Medical Association, may be substituted:

	Gm. or Cc.
Oil of rose	0.05
Oil of lavender	0.10
Oil of bergamot	0.20
Tragacanth	5.00
Boric acid	15.00
Glycerin	15.00
Water, to make	1,000.00

PYELITIS IN PERNICIOUS ANEMIA

To the Editor:—In THE JOURNAL, Dec. 19, 1931, p. 1912, it is stated that "it is important to remember that infections, such as pyelitis, can inhibit the action of the active principle effective in pernicious anemia." Can you furnish references in the literature relative to this statement?

EDMOND BECHTOLD, M.D., Belleville, Ill.

ANSWER.—Minot and Murphy in their original paper concerning the treatment of pernicious anemia with liver indicated that infection could inhibit the effectiveness of this treatment. Since then, a large number of papers concerning the effect of liver, liver extracts and other potent substances in pernicious anemia have described or commented on the fact that infection inhibits the effect of treatment. Synopses of a large number of these articles are given in the annual reviews concerning the Blood in Nelson's Loose Leaf Medicine.

A few pertinent references are:

Beebe, R. T., and Lewis, G. E.: The Maintenance Dose of Potent Material in Pernicious Anemia, *Am. J. M. Sc.* **181**: 796 (June) 1931.

Smithburn, K. C., and Zerfas, L. G.: The Inhibitory Action of Infection and Fever on the Hematopoietic Response in a Case of Pernicious Anemia, *Ann. Int. Med.* **4**: 1108 (March) 1931.

Minot, G. R.: Some Fundamental Clinical Aspects of Deficiencies, *Ann. Int. Med.* **3**: 216 (Sept.) 1929.

Minot, G. R., and Castle, W. B.: The Adequate Treatment of Anemia, *Ann. Int. Med.* **5**: 159 (Aug.) 1931.

HYPERKERATOSIS

To the Editor:—A woman, aged 30, has been troubled for two years with cracking of the skin on the flexor surfaces of the hands (palms) and extensor surfaces (soles) of the feet, occurring at the last month of pregnancy; there is slight itching at times; a child of 4 years is beginning to have the same condition. I should appreciate advice as to diagnosis and subsequent treatment. Please omit name.

M.D., District of Columbia.

ANSWER.—This may be an acquired hyperkeratosis, the result of local irritation and excessive dryness of the skin. The fact that the same condition is developing in the child suggests the possibility of the rare form of congenital palmar and plantar keratoderma. The eczema may be secondary to an epidermophyton infection. Mildly stimulating ointments containing tar or salicylic acid (from 2 to 4 per cent) may be tried. Roentgen therapy in small doses, from one-eighth to one-fourth skin unit once weekly, is frequently successful.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: New Orleans, May 9. Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examinations will be held in nineteen cities of the United States and Canada, March 26. The general, oral and clinical examination will be held in New Orleans, May 10. Sec., Dr. Paul Titus, 1015 Highland Building, Fittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: New Orleans, May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, April 5-6. Sec., Dr. B. M. Berger, 12 N. Central Ave., Phoenix.

ARKANSAS: *Basic Science.* Little Rock, May 2. Sec., Mr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock. *Regular.* Little Rock, May 10-11. Sec., Dr. Sam J. Allbright, Searcy. *Eclectic.* Little Rock, May 10. Sec., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith. *Homeopathic.* Little Rock, May 10. Sec., Dr. Allison A. Pringle, Eureka Springs.

COLORADO: Denver, April 6-9. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

IDAHO: Boise, April 5. Comm. of Law Enforcement, Hon. Emmitt Pfost, Boise.

ILLINOIS: Chicago, April 12-14. Supt., Mr. Paul B. Johnson, Springfield.

MINNESOTA: *Basic Science.* Minneapolis, April 5-6. Sec., Dr. J. C. McKinley, 125 Millard Hall, University of Minnesota, Minneapolis. *Regular.* Minneapolis, April 19-21. Sec., Dr. E. J. Engberg, 524 Lowry Bldg., St. Paul.

MONTANA: Helena, April 5. Sec., Dr. S. A. Cooney, Power Block, Helena.

NEBRASKA: *Basic Science.* Omaha, May 3-4. Dir., Mrs. Clark Perkins, Lincoln.

NEVADA: Carson City, May 2-4. Sec., Dr. Edward E. Hamer, Carson City.

NEW MEXICO: Santa Fe, April 11. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

RHODE ISLAND: Providence, April 7-8. Dir., Dr. Lester A. Round, 319 State Office Building, Providence.

WISCONSIN: *Reciprocity.* Milwaukee, April 6. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

MEETING OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The Council on Medical Education and Hospitals met in connection with the Annual Congress on Medical Education, Medical Licensure and Hospitals at the Palmer House, Chicago, February 15 and 16.

Following are some of the transactions of the meeting:

The list of physicians specializing in pathology and in clinical pathology (401) and the list of physicians specializing in radiology (1001) have been under revision during the past year, and certain additions and removals were approved by vote of the Council. The Council approved changes in the "Essentials" for admission to these lists which under the revision places the emphasis on the qualifications of the specialist rather than on the laboratory.

The "Essentials of a Registered Hospital" were revised and adopted.

All of the foregoing revised "Essentials" will be submitted for publication in appropriate issues of THE JOURNAL.

Approval for internships and for residencies were granted as follows:

Hospitals Approved for Intern Training:

Baptist State Hospital, Little Rock, Ark.
Women and Children's Hospital, Chicago.
Woodlawn Hospital, Chicago.
Protestant Deaconess Hospital, Evansville, Ind.
Norton Memorial Infirmary, Louisville, Ky.
Leila Y. Post Montgomery Hospital, Battle Creek, Mich.
St. Louis County Hospital, Clayton, Mo.
Highsmith Hospital, Fayetteville, N. C.
Davis Hospital, Statesville, N. C.
St. Rita's Hospital, Lima, Ohio.
St. Elizabeth's Hospital, Youngstown, Ohio.
Misericordia Hospital, Milwaukee.
St. Luke's Hospital, Milwaukee.

Hospitals Approved for Residencies in Specialties:

Compton Sanitarium, Compton, Calif.
Orthopaedic Hospital-School, Los Angeles.
Cook County Tuberculosis Hospital, Oak Forest.
Boehne Tuberculosis Hospital, Evansville, Ind.
Central State Hospital, Indianapolis.

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Community Hospital, Beloit, Kan.
Jackson Memorial, Boston Floating Hospital, Boston.
St. Mary's Hospital, Grand Rapids, Mich.
Sunshine Sanatorium, Grand Rapids, Mich.
Kalamazoo State Hospital, Kalamazoo, Mich.
Morgan Heights Sanatorium, Marquette, Mich.
Ypsilanti State Hospital, Ypsilanti, Mich.
St. Louis County Hospital, Clayton, Mo.
State Hospital No. 3, Nevada, Mo.
State Hospital No. 2, St. Joseph, Mo.
Grasslands Hospital, Valhalla, N. Y.
City-County Hospital, Fort Worth, Texas.
Hermann Hospital, Houston, Texas.
St. Joseph's Hospital, Milwaukee.

The Council adopted the policy of having hospitals personally examined for registration as well as for approval, as far as resources permit. Changes in the Register, affecting the status of certain hospitals, were presented to the Council and adopted. These changes are based on personal visits and other means of communication with the hospitals.

Nebraska November Examination

Mrs. Clark Perkins, director, Bureau of Examining Boards, Nebraska Department of Public Welfare, reports the written examination held at Lincoln, Nov. 23-24, 1931. The examination covered 10 subjects and included 96 questions. An average of 75 per cent was required to pass. Ten candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED Year Grad.	Per Cent
State University of Iowa College of Medicine	(1930)	85.2
Creighton University School of Med.	(1930) 77.5, 87, (1931) (1931) 79.3, 80.6, 81.4, 81.8, 84.9	86.8
University of Nebraska College of Medicine	(1929)	84.4,

Mrs. Perkins also reports 6 physicians licensed by reciprocity with other states and 2 physicians licensed by endorsement from July 27 to Nov. 6, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
State University of Iowa College of Medicine	(1927)	Iowa
Creighton University School of Medicine	(1929)	Kansas
University of Nebraska College of Med.	(1929)	Michigan, Montana
University of Pittsburgh School of Medicine	(1926)	Penna.
University of Wurzburg Faculty of Medicine	(1922)	Iowa

College	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Harvard University Medical School	(1929)	N. B. M. Ex.
University of Nebraska College of Medicine	(1930)	N. B. M. Ex.

Wisconsin October Report

Dr. Robert E. Flynn, secretary, Wisconsin State Board of Medical Examiners, reports 8 physicians licensed by examination, 35 physicians licensed by reciprocity with other states and 2 physicians licensed by endorsement of credentials at a meeting held in Milwaukee, Oct. 21, 1931. The following colleges were represented:

College	LICENSED BY EXAMINATION Year Grad.	Number Examined
Northwestern University Medical School	(1931)	1
Marquette University School of Medicine	(1931, 5)	5
University of Wisconsin Medical School	(1929), (1930)	2

College	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1916)	Illinois
Loyola University School of Medicine	(1930)	Illinois
Northwestern Univ. Med. School	(1916), (1930), (1931, 3)	Illinois
Rush Med. College (1929), (1931)	(1913) Iowa, (1924) N. Dakota, (1929)	California, Illinois
University of Illinois College of Medicine	(1929), (1930)	Illinois
Indiana University School of Medicine	(1921), (1930)	Indiana
Harvard University Medical School	(1915)	Minnesota
University of Michigan Medical School	(1928), (1929, 2)	Michigan
University of Minnesota Medical School	(1930, 2), (1931)	Minnesota
St. Louis University School of Medicine	(1920)	Iowa
Washington University School of Medicine	(1929, 2)	Missouri
Creighton University School of Medicine	(1927)	Nebraska
University of Nebraska College of Medicine	(1930)	Louisiana
University of Buffalo School of Medicine	(1917)*	New York
University of Wisconsin Medical School (1930) Missouri	(1929)	Kansas, Utah,
Dalhousie University Faculty of Medicine	(1926)	Minnesota
University of Toronto Faculty of Medicine	(1924)*	Minnesota
University of Göttingen Faculty of Medicine	(1923)*	New York

College	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Northwestern University Medical School	(1930)*	N. B. M. Ex.
University of Minnesota Medical School	(1931)	N. B. M. Ex.

* Licenses are being withheld pending completion of their credentials.

Book Notices

Fundamentals of Orthopedic Surgery in General Medicine and Surgery (Harvard Lectures). By Robert B. Osgood, M.D., F.A.C.S., Consulting Surgeon, Boston Children's Hospital, and Nathaniel Allison, M.D., F.A.C.S., Professor of Surgery in Charge of the Division of Orthopedic Surgery, University of Chicago. Cloth. Price, $3. Pp. 311. New York: Macmillan Company, 1931.

The purpose of this collection of lectures, by two leading orthopedic surgeons, is to make available to the advanced medical student and general practitioner information as to the diagnosis and the immediate treatment of diseases and lesions falling in the domain of orthopedic surgery. The authors emphasize those contacts between orthopedic surgery and general medicine and general surgery which every physician encounters. The subject matter should enable the practitioner to apply intelligent "first aid" and to recognize the nature of the lesion or the presence of the underlying disease.

The authors became convinced eight years ago that the purely didactic lecture was inefficient. For six years with several rewritings they have presented these lectures to the students. They believe that in the four year medical course the student should be taught only enough of the recognized specialties of medicine and surgery to enable him to meet the demands of general practice with intelligence and safety. They believe that full class exercises in a specialty should include such teachings in the fundamentals as well enable the practitioner to make reasonably accurate diagnoses and recognize certain conditions which demand immediate and appropriate treatment. These exercises should be supplemented by clinical work with small sections. The lectures were written as clearly and simply as possible, with a few contributory references for those who desire more detailed information. They express their acknowledgment of indebtedness to the late Dr. Robert W. Lovett, much of whose thought and some of whose actual writings are included in the text.

The lectures were separately mimeographed and delivered to each student one week before the whole class exercise at which the subject was to be discussed. The students were requested to read each lecture before coming to the exercise, take whatever notes they desired, and hand the signed copies back before the given exercise.

The hour of the exercise was divided into three periods of approximately twenty minutes each. The first period was called the visual approach, the second period the deductive approach, and the third period the eductive approach. During the first period the subject was amplified by the exhibition of illustrative clinical cases, pathologic specimens and lantern slides. During the second period the students were permitted to ask the lecturer questions concerning the previous written lecture and clinical demonstration. During the third period the instructor selected students at random from a class list, quizzed them on information contained in the written lecture, and gave them an approximate mark on their answers.

They believe that a surgical specialty such as orthopedic surgery should always be considered as a part of general surgery. It should be based on and strictly follow the principles that govern general surgery. They state that orthopedic surgery includes the congenital and acquired deformities of the skeleton, certain diseases and injuries of the bones and joints, certain disturbances of the neuromuscular mechanism of the body, and static disabilities and deformities. The prevention and correction of deformity and disability in the motor mechanics of the body is a recognized field of orthopedic surgery.

The twelve lectures include general joint phenomena; the reactions of developmental and adult bone, nutritional and growth disturbances; congenital deformities, cerebral and spastic palsy; obstetric paralysis; Volkmann's deformity and Dupuytren's contracture; scoliosis; tuberculosis; anterior poliomyelitis; chronic rheumatic arthritis; traumatic disorders of joints and bursae; the relation of orthopedic surgery to industry and body mechanics and statics.

The three main causes for tissue changes in the bones and joints, including trauma, infection and toxins, are outlined. Joints react to irritation by synovial hyperemia, swelling, increased joint fluid and loss of function. Arthritis is divided

into type I, atrophic arthritis, and type II, hypertrophic arthritis.

It is disappointing not to find brief descriptions of operations and the application of plaster-of-paris casts. These are given in other parts of the course. The subject of orthopedic surgery cannot be covered in twelve lectures; it requires about twenty sessions. One should discuss the question of supplementary operations, recumbent treatment, the application of plaster-of-paris technic and the use of braces and splints. Many orthopedic conditions are not covered in the lectures. The meager description of Osgood-Schlatter's disease, and especially the treatment, is disappointing. So is the short description of treatment of other types of epiphyseal disturbances. It is surprising that there is no mention of convalescent serum in the treatment of infantile paralysis even though it is not usually administered by the orthopedic surgeon. The description of treatment of apophysitis of the tibial tubercle is too short. There is an objection to the term "obstetrical paralysis" because of its similarity to the term "obstetrician." No mention is made of Kanavel's important work on Dupuytren's contracture.

In the lecture on poliomyelitis, the authors state definitely that the orthopedic surgeon has no part to play in the first few days of the disorder before paralytic symptoms appear. This conception is not universally held.

When one considers the authoritative writings of the two authors, one expects to learn from this book the last word on such subjects as upper tibial epiphysitis, bursitis in the region of the elbow, and arthritis, which are the pet subjects of the senior author; and general orthopedic pathology, tuberculosis of the knee, and atrophy of bone and synovial fluid, which are the favorite subjects of the junior author.

The book presents an interesting pedagogic experiment. It would be interesting to hear the comments of the medical students comparing these with lectures in other subjects. The brief historical notes serve to increase the interest in the subject. A short bibliography is appended to each chapter. The publisher's work is good. The book should be of value to interns and general practitioners and may well serve as a guide to teachers of orthopedic surgery.

Ein bewegtes Gelehrtenleben: Erinnerungen und Erlebnisse. Kämpfe und Gedanken. Von Otto Lubarsch. Paper. Price, 18 marks. Pp. 606, with a portrait. Berlin: Julius Springer, 1931.

"What a battle!" might well epitomize this work, in which Lubarsch reveals his reaction to his environment; his motives, his weaknesses, his triumphs. It is more than sturdy independence that brought him into conflict at almost every point of contact—a strong sense of justice, a feeling for the underdog, perhaps a sharpened sensitivity, all contributed. By inheritance he has an understanding for the Semitic, by environment and education a love for the Germanic, by profession an appreciation of the international point of view on many subjects; such backgrounds for a strong personality inevitably lead the possessor into acute situations—situations which might not even arise for an individual of simpler pattern and, if encountered, ordinarily circumvented. Lubarsch seems never to have compromised. That in itself is genuinely refreshing to those who may be surfeited on our vaunted ability to compromise and keep things political, academic, industrial, running "smoothly" in America. Lubarsch would never have been recommended as a pathologist by any of our foundations. It speaks well for Althoff (the influential adviser for medical affairs in the ministry of education) that he repeatedly tried to put Lubarsch on the road to academic success despite his reputation as an *enfant terrible*. Althoff's support usually shattered on the resistance of individual faculties. As a matter of fact, it was twenty-three years from the time of his habilitation until he received his academic professorship at Kiel, although in the interim he held government appointments at Posen and at Düsseldorf. There is much of Virchow in Lubarsch, despite superficial dissimilarities. Both men were of indefatigable energy, were interested in social and political life, were interested in the fundamental problems of their profession, and uncompromising idealists. Virchow, of course, was an opponent of the aristocratic tradition in life because he saw about him the faults of too much aristocracy. Lubarsch has become an opponent of democracy because he sees the serious faults of too much democracy. Neither men concealed their point of view under academic robes. Lubarsch does not write much about his own work and that is perhaps as it should be. Others may do that well but no one can write of the mental reactions of Lubarsch, and this is done in so straightforward and honest a fashion that it becomes a really valuable document of the day. It is a lengthy record and not suited for rapid perusal, but the initiated will derive much pleasure. The pathologist who is interested only in pathology may find it tedious.

A Compendium of the Statute Law of Coroners and Medical Examiners in the United States. By George H. Weinmann, LL.B., Attorney and Counselor at Law. Issued under the Auspices of the Committee on Medicolegal Problems. Bulletin of the National Research Council, Number 83. Paper. Price, $3. Pp. 240. Washington, D. C.: National Research Council, 1931.

This is the third of a series of projects undertaken under the auspices of the committee on medicolegal problems of the National Research Council. The first was an investigation of the functioning of the offices of coroner and medical examiner, by O. T. Schultz and E. M. Morgan. The second was a survey of the law of the dead human body, by the author of the present study.

This volume brings together the laws relating to the coroner and medical examiner in the various jurisdictions of the United States. It considers these laws under the five main subject headings of selection, qualification, and tenure of office of the coroner; deputy coroners; powers and duties of the coroner; compensation and fees; and medical examiners. Under each heading the basic common law principles are briefly discussed, the relevant legislative enactments in each jurisdiction are quoted, and court decisions that have modified or defined the common law or statutory provisions are cited.

The office of coroner has been established by the state constitution of some states and by legislative enactment in other states. Although the office seems to be considered sacrosanct by some, the coroner is not an indispensable official. Even in states that have not replaced him by the medical examiner, the duties of coroner may be performed by justices of the peace, as in Arizona and Florida, or by the county attorney, as in Nebraska and Washington.

No qualifications, other than those of the ordinary voter, are required of the coroner in most states. A few specify that he shall not practice law while serving as coroner. In Louisiana and Virginia the coroner must be a physician qualified to practice medicine. In Michigan, medical qualifications are required of the coroners of counties with a population of 250,000 or more, in Ohio in counties of 100,000 or over. The Alabama code contains the curious provisions that any qualified elector may be coroner of a county with a population of 200,000 or more, but that in counties with from 95,000 to 195,000 inhabitants the coroner must be a physician.

The most important magisterial duty of the coroner is the holding of inquests. Deaths that must be referred to the coroner in general fall into two distinct groups, namely, those due to violence, and sudden deaths of persons not attended before death by a licensed physician. In the holding of inquests the coroner is limited by the statutes of practically all states to deaths presumably due to violence. Some states make still further restrictions, in that death must be due to the violence of another, or must presumably be felonious in character, or must not be due to casualty. In certain states (Iowa and Missouri) the coroner is required to hold an inquest in nonviolent deaths if an inquest is requested by the relatives; the latter, however, become responsible for the costs of the proceeding if death is found not to have been due to violence. In Connecticut, New York, Oregon and Rhode Island the coroner holds antemortem inquests in the case of those seriously wounded by another.

Whereas the holding of the inquest is the most important magisterial or legal duty of the coroner's office, the performance of necropsy for the purpose of determining the cause of death is the important medical function of the office. The statutes and court decisions quoted establish quite clearly that the coroner has no authority to perform or order a necropsy in any given instance unless he has the power to hold an inquest on the body. The coroner's office, therefore, has only limited value as an agency for the determination of causes of

death, since in most jurisdictions half or more than half of the deaths referred to the coroner are not due to violence.

The final section quotes fully the laws of those jurisdictions that use the medical examiner system. In his opening paragraph, as well as in a concluding one, Weinmann intimates that these laws have merely changed the name of an official from coroner to medical examiner. This is a view that many members of the legal profession seem to hold. But it will be apparent to any one who reads the medical examiner acts of Massachusetts, New Jersey and New York that these laws do more than merely make a change in name. They replace an antiquated system, incapable of adapting itself to modern conditions, by a mode of procedure that recognizes the importance of the medical duties that the coroner should perform. They define the duties of the medical examiner much more precisely than does any law relating to the coroner, and they transfer the magisterial duties to existing agencies of justice much better qualified to perform those duties than is the coroner's office. The New Jersey act of 1927 should serve as a model to any community that proposes to take this forward step.

In discussing the admissibility in evidence of the medical examiner's necropsy report, Weinmann says that such a document is not admissible "in the absence of a statute expressly making such report admissible. At the present writing, however, there appears to be no such statute." The second paragraph of section 6 of the New Jersey act, quoted by Weinmann on page 220, does expressly provide that the records of the medical examiner or certified transcripts thereof "shall be received as evidence in any court in this state of the matters and facts therein contained."

Reform of the coroner's office should receive much more serious attention than it does receive. Weinmann has done a service of great value in bringing together the laws relating to the office. The student of the medicolegal problems presented by the coroner's office obtains a much better grasp of the subject than has heretofore been possible. The leader of public opinion who may desire to direct that opinion along a line that will prove beneficial to society will find the volume useful. It is recommended to the medical and legal professions as a store of information on a subject concerning which most of the members of those professions have little accurate knowledge. A subject index and a geographic index make reference easy.

Praktische Differentialdiagnostik für Ärzte und Studierende. Herausgegeben von Professor Dr. Georg Honigmann. Band VII: Differentialdiagnostik in der Pädiatrie. Von Dr. med. Walter Pflüger, Facharzt für Kinderkrankheiten in Stuttgart. Mit einem Vorwort von Prof. Dr. med. Joseph Husler, Leiter des Kinderkrankenhauses München-Schwabing. Paper. Price, 11.50 marks. Pp. 160. Dresden: Theodor Steinkopff, 1931.

This is the seventh and concluding volume of a comprehensive work on practical differential diagnosis. The editor, Prof. Dr. Georg Honigmann, died before it was completed. The volume is edited by Dr. Walter Pflüger of Stuttgart and Prof. Dr. Joseph Husler of Munich. The book is a valuable addition to pediatric textbooks and is especially designed for the general practitioner and student rather than the specialist. The information regarding differential diagnosis is easily available and concise: in the chapter on the new-born, the differential diagnosis on the causes of asphyxia is discussed, then on the causes of convulsions, then icterus, swellings of the head, fever in the first week, bloody stools and hematemesis. Another example of the method of differentiation may be cited from the section on the kidney: disturbances in urine secretion are differentiated, cause of polyuria, causes of anuria, enuresis, differentiation of causes of bacteriuria, and pus in the urine, hematuria and hemoglobinuria. In the chapter on the exanthems the fine rashes, as scarlet fever, German measles, fourth disease, syphilis and sunburn, are differentiated. Then the coarser rashes are distinguished from one another, as measles, infectious erythema, urticaria and drug rashes. Then the exanthems with pustules, such as varicella, variola, pemphigus and impetigo, are differentiated. Most conditions are grouped and differentiated on the basis of symptoms or obvious manifestations revealed by physical or laboratory examination. The anemias, however, are differentiated on the basis of pathogenesis. The volume is well worth having in one's library.

The Wills Hospital of Philadelphia: The Influence of European and British Ophthalmology Upon It, and the Part It Played in the Last 100 Years in Developing Ophthalmology in America. By William Campbell Posey, B.A., M.D., Consulting Surgeon to the Hospital, and Samuel Horton Brown, M.D. Cloth. Price, $5. Pp. 340, with illustrations. Philadelphia: J. B. Lippincott Company, 1931.

To one who practices ophthalmology for the sake of eking out an existence, the purchase and reading of this book would be futile. But to the man who is interested in his profession, who has a pride in the development of American ophthalmology and who likes to be a bit of the yeast that ferments international ophthalmology, this book is a treat. As the subtitle says, it shows the influence of European and British ophthalmology on Wills Hospital and the part it played in the last hundred years in developing ophthalmology in America. The founding and history of the institution are taken up at length, together with a description of the old buildings and finally with the projected new building. Then there are short biographic sketches of the various surgeons who have been identified with the hospital. The instruction given by the hospital is touched on and its character is mutely vouched for by the list of former residents who are now making ophthalmologic history in this country. The various types of operations that have been and still are being performed at Wills are described, together with most illuminating historical comments. There follows then a list of books written since the inception of the hospital by various members of the staff. The spirit of Wills Eye Hospital is not mentioned, but it is that modest self-effacing spirit which made Wills Eye Hospital the cradle of American ophthalmology and that has guided American ophthalmology through the dangers of puberty and adolescence to the robust manhood it now presents. All credit is due to the chroniclers for the enormous amount of work the making of this book entailed and for the interesting presentation of material that all American ophthalmologists should know.

Lehrbuch der klinischen Untersuchungsmethoden für Studierende und praktische Ärzte. Band II, Hälfte 2. Von Prof. Dr. H. Sahli. Seventh edition. Paper. Price, 30 marks. Pp. 369-686, with illustrations. Leipzig: Franz Deuticke, 1931.

This section of the second volume of Sahli's revised textbook is divided into discussions of hematology, blood chemistry and serology. The treatment of the subject of hematology is handled in a refreshing manner. It is not a mere cataloguing of detailed facts but a clear and concise discussion of the principles, significance and interpretation of the data presented. The author has chosen the discourse method of presenting the subject and it is well executed. The necessity of rendering hematologic facts more dynamic is stressed, and overemphasis of the significance of changing blood pictures in infectious diseases is avoided. The chapters dealing with blood chemistry and serology are well covered but are not as up to date as some of the recent textbooks on the same subject. In general, the material is treated in a clear and concise manner and is well handled. The book is not recommended for those who possess only an elementary training in laboratory diagnosis, as much of the text presumes a familiarity with the subjects considered.

Heredity. By A. Franklin Shull, Professor of Zoölogy in the University of Michigan. Second edition. Cloth. Price, $3. Pp. 345, with 143 illustrations. New York: McGraw-Hill Book Company, Inc., 1931.

The first edition of this textbook, published in 1926, was intended to give a scientifically adequate presentation of the principles of genetics, and of the bearing of these on problems of human society, to readers who had no previous knowledge of the subject. It has been generally recognized to have been admirably successful in this aim. The second edition has been extensively revised. Certain rather technical subjects have been introduced because of recently demonstrated applications to human heredity. The discussion of heredity in man has been considerably enlarged and the discussion of population and the immigration question brought down to date. Problems have been introduced in the fundamental parts to increase the usefulness as a textbook. Numerous other minor changes have been made. One feature that deserves attention is the constant emphasis on the physiologic nature of the activity of the hereditary units. Research in genetics has been largely concentrated on the problem of the mechanism of transmission, and only recently has attention begun to be directed on problems of

gene action. Characteristics have been looked on as merely more or less convenient indicators of the presence or absence of the ultimate units. In consequence, geneticists have often fallen into a loose way of speaking of particular genes as if they were representative of particular characters. It has been well known, of course, that gene and character are not related in any one-to-one fashion. Whatever the immediate effects of each gene may be, these have ramifying consequences which ultimately touch many physiologic processes, including ones of which organic structure may be a by-product. Each gene replacement in general has multiple effects and, conversely, any assignable characteristic is affected by many genes. Professor Shull is exceptionally successful in keeping this point of view before the reader and in giving due weight to environmental as well as genetic factors. The chapters on human heredity have been carefully written. Characters such as eye color and feeblemindedness, which have seen long service in elementary books as examples of simple mendelian heredity, on the basis of early work, are discussed in the light of the complexity revealed by more recent researches.

Alte und neuzeitliche Ernährungsfragen unter Mitberücksichtigung wirtschaftlicher Gesichtspunkte. Von Professor Dr. Carl v. Noorden, Geheimer Medizinalrat, Vorstand der Sonderabteilung für Stoffwechselstörungen und diätetische Heilmethoden des Krankenhauses der Stadt Wien. Paper. Price, 6.90 marks. Pp. 117. Berlin: Julius Springer, 1931.

This small volume is not intended to be a comprehensive work on nutrition. It is rather a critical analysis of a few phases of this subject, from a chiefly practical standpoint, and in a general rather than detailed manner. The material presented includes several chapters on the influence of diet on the acid-base balance and the mineral metabolism in man. One chapter is devoted to the place of uncooked foods in the dietary, and another to miscellaneous subjects such as adequate protein intake, the use of rye bread, coffee and substitutes for it, and vitamins. The author considers these subjects from two distinct standpoints: first, the national or racial dietary and, second, the therapeutic diet. The practical bearing of his discussion of the national dietary is, like his bibliography, almost entirely German. His observations on therapeutic diets have a much wider application. The author points out the influence of modern transportation, commercial methods, and fashions in cooking on the German dietary. He emphasizes the fact that the diet of a people or a country embodies a great deal of practical experience and is not to be tampered with lightly. He indicates certain precautionary measures that ought to be taken to keep the German dietary wholesome. While admitting and enlarging on the value of certain special diets in disease, the author deprecates the overenthusiastic application of such knowledge to the diet of the normal individual. He sounds the warning that the tried and proved dietary knowledge of the past should not be forgotten or discarded for a passing fad. He concludes that one may work harm as well as benefit by diet and that it behooves the physician to choose with care. This book hardly answers the purpose of the physician seeking a collection of dietary formulas or specific advice as to the dietary management of disease. Its breadth of outlook and maturity of judgment, however, should make it well worth the reading for those whose special interests lie in the field of dietetics and nutrition.

Evolution of Facial Musculature and Facial Expression. By Ernst Huber, Ph.D., M.D., Associate Professor of Anatomy, the Johns Hopkins University. Cloth. Price, $2.50. Pp. 184, with 28 illustrations. Baltimore: The Johns Hopkins Press, 1931.

Facial expression, momentary or permanent, plays a prominent part in human intercourse. It indicates character and gives beauty and interest to the human countenance. It also gives it individuality; people's faces differ. Each race has its characteristic "face," as have horses and dogs; and many animals are capable of much facial expression. Huber has studied the anatomic mechanism that produces this expression. He has been especially interested in its evolution, its development during childhood, and racial differences in it. It evolves in the mammals from two superficial neck muscles, both visceral in origin: the platysma (originally nuchal in position) and the sphincter colli profundus. From the first are developed the muscles behind the ear in the lower lip and the platysma of the neck; from the second are developed some intrinsic muscles of the ear, the orbicularis oculi and associated muscles, the orbicularis oris and cheek muscles and the vibrissae movers. All these muscles are characteristic of mammals and become progressively better developed from the lower to the higher orders. In the lower each forms a common mass, plastic and susceptible of development in special parts for special purposes. In each human individual it is developed entirely after birth; there is no facial expression in the new-born baby. In the first four or five years the power of expression is developed, and in these early years it works automatically. The facial expression of little children is always honest; in later life it may be intentionally inhibited by control from the cortex of the brain. This control, nonexistent in children, is susceptible of much development through practice. It is interesting to note that Huber believes that convincing facial expression must always be honest and that the only way in which great actors are able to play their emotional parts successfully is by really experiencing the emotions they seek to express. These muscles grow by exercise, accentuating the facial expressions they produce. In old age the face skin loses its elasticity: it tends to become fixed in a mask—not immovable but nevertheless a record of the prevailing emotions which have played over it through the years. The racial differences are studied in six races: White, Negro, Chinese, Hawaiian, Australian and Papua-Melanesian. They are illustrated by full page pictures, which are also assembled on one plate for comparison. Huber finds that evolution of the parts of the central nervous system which control them precedes the evolution of the facial muscles themselves. This adds strength to the view of those anatomists who believe that the central nervous system "is" the man and that the most direct study of his evolution lies in the study of the evolution of the brain. The subject is one of great interest and this publication is much the most important contribution to it that has been made in America.

Embonpoint et obésité: Conceptions et thérapeutiques actuelles. Par Jean Leray, médecin consultant à Brides-les-Bains. Préface du Dr. Chiray. Paper. Price, 20 francs. Pp. 195. Paris: Masson & Cie, 1931.

This book contains practically all the information now available on the subject of obesity. It is well put together, particularly from the clinical point of view. The pathologic and etiologic classifications might not be accepted by every one, but on the whole the book serves as an excellent review of current knowledge. It is interesting to note that almost all the literature on this subject is of recent date and includes at least some of the more important American contributions. Newburgh's latest publications are apparently too recent to be included.

Imhotep to Harvey: Backgrounds of Medical History. By C. N. B. Camac, M.D., Assistant Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University. Foreword by Henry Fairfield Osborn, Sc.D., LL.D. Cloth. Price, $3.75. Pp. 324, with 4 illustrations. New York: Paul B. Hoeber, Inc., 1931.

The notes included in this volume have been used by the author in conducting seminars in medical history in Columbia University. The classes consisted of from ten to fifteen fourth year medical students. In these seminars the associated material used is spread on a large table; the students examine the exhibits and confer concerning them. Thus medical history is made living and attractive. The book serves, therefore, as an outline of medical history from the earliest times to the end of the seventeenth century. It also provides a discussion of various schools of thought. There is an essay on the meaning of the emblem of medicine and the book includes some reprints of important historical documents of great scientific interest. Special appendixes provide chronological tables and a good bibliography. The book is handsomely printed, as are all the medical contributions which come from Mr. Hoeber's press.

A Psychiatrist's Anthology. By Louis J. Karnosh. Boards. Price, $1. Pp. 36, with illustrations. Cleveland: Occupational Therapy Press, 1931.

This is an artistic contribution printed by the Occupational Therapy Press. There are only 168 copies available. The book is a literary curiosity, as any volume of poems which includes words like "diencephalon" and "presbyophrenia" would have to be. The illustrations exemplify the disordered mind; the prose represents the moods of the insane. The book should be of special interest to collectors and to psychiatrists.

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A Dictionary of Terms Dealing with Disorders of Speech. A Temporary and Incomplete Edition Published in Order to Invite Criticism and More Adequate Definitions, Prior to Publication of a Later Edition, to be Based on Further Study. Compiled by Samuel D. Robbins, A.M., Director, Boston Stammerers' Institute, and Sara M. Stinchfield, Ph.D., Associate Professor of Psychology, Mount Holyoke College, Members of the Nomenclature Committee of the American Society for the Study of Disorders of Speech. Paper. Pp. 27. Boston: American Society for the Study of Disorders of Speech, 1931.

This booklet, prepared under the auspices of the American Society for the Study of Disorders of Speech, is developed primarily to provide a standard nomenclature for workers in this field. Obviously the authors have given most serious consideration to the subject and are not willing to assume that they have said the last word that is to be said about it. They are willing to accept additions and corrections with a view to the eventual publication of an international edition.

Die Allgemeinerscheinungen der Hirngeschwülste. Von F. Kehrer, o. ö. Professor und Direktor des Psychiatrischen- und Nervenklinik, Münster i.W. Paper. Price, 10.50 marks. Pp. 116, with 11 illustrations. Leipzig: Georg Thieme, 1931.

This monograph probably clarifies the diagnosis of brain tumors in the author's own mind much more than it adds anything to the knowledge of intracranial tumors. He has repeated many things that have been well known in this country for several years. In an attempt to add new material he has placed considerable stress on the finding of increased pain responses and reflexes, particularly over the face, head and extremities, in intracranial tumors. He has stated that there is an elevated pain threshold in the presence of an altered physiologic action in the brain. Whereas clinical observations are always of value, it would seem that these are a bit far fetched; and they are no real contribution to the diagnosis of intracranial tumors.

Your Health and Your Earning Power: A Book Prepared for the Use of the Employees of the Electric Light and Power Industry. Cloth. Price, 65 cents. Pp. 181, with illustrations. New York: National Electric Light Association, 1931.

This book was prepared for the employees of the electric light and power industry through the National Electric Light Association. All the chapters that it contains have been prepared by competent workers through the Committee on Health Promotion and First Aid of the association. The book is essentially a guide to hygiene written in simple language. It covers briefly knowledge of anatomy, physiology, diet, living habits, personal hygiene and disease prevention, first aid in sickness, home nursing and first aid to the injured. The material is reliable.

Books for Tired Eyes: A List of Books in Large Print. Compiled by Charlotte Matson, Minneapolis Public Library. Second edition. Paper. Pp. 58. Chicago: American Library Association, 1931.

The American Library Association has done a valuable service in making available a list of books printed in large type for readers who need that type of book. All the books in the list are printed in type as large as 14 point; some of them are in type as large as 24 point. The books are classified as fiction, with subclassifications, biography, travel and general literature. There is also a list of books for young people.

Quacks. By Charles W. Warner. Cloth. Price, $1. Pp. 206. Jackson, Mississippi: The Author, 1930.

The author has for many years been associated with the sale of various books and publications to physicians. He writes as a thorough friend of the profession. Most of his material has been taken from easily available sources. The writing is "rough and ready" and will, no doubt, afford both interest and amusement to every medical reader. The author has also arranged to provide individual chapters in the form of pamphlets to those who wish to extend his circulation.

Woman's Coming of Age: A Symposium. Edited by Samuel D. Schmalhausen and V. F. Calverton. Cloth. Price, $3.75. Pp. 569. New York: Horace Liveright, Inc., 1931.

This volume is a symposium presented largely by advanced thinkers on the subject of women. The writing is interesting and thought provoking throughout. From personal experiences, many readers will find much on which they differ with those who write. Of particular interest to the physician is part two, which deals with psychology and pathology of the sexes, including particularly the articles entitled "What the Clinic Reveals," by Carrie Weaver Smith; "The Emotional Life of Modern Women," by G. V. Hamilton; "Woman's Sexual Nature," by Havelock Ellis, and "The Struggle Against Childbearing," by Herbert Aptekar. Other parts of the book deal with women through the ages, the new woman, and problems and projects. The book includes twenty-eight essays and an introduction, concluding with biographic outlines of the lives of the contributors.

Medicolegal

Accident Insurance and Death from Carbon Monoxide

(Miller v. Inter-Ocean Casualty Co. (W. Va.), 158 S. E. 706)

On Dec. 16, 1928, the automobile which Miller was driving became hopelessly mired. The evening was damp and cold. Miller's two companions proceeded afoot, while he remained with the car in anticipation of the arrival of a team of horses which passers-by had promised to send to pull the car out of the mud. Miller, while waiting, was to repair a tire which had blown out. The following morning, Miller was found dead in the car. The engine was running and the windows were closed. The tire had not been repaired. The physician who examined the body found the lips a pink color and a "cherry blush" on the cheeks, instead of the usual pallor of death. He diagnosed the case as one of carbon monoxide poisoning. Miller was insured against the effects of bodily injury caused directly, exclusively, and independently of all other causes by external, violent, and accidental means, "which bodily injury is sustained by the insured in (1) automobile accidents, while operating, driving, riding in or on, . . . an automobile." The insurer, however, refused payment, and Miller's widow, the beneficiary under the policy, instituted suit. From a judgment in favor of the widow, the insurer appealed to the Supreme Court of Appeals of West Virginia, where the judgment of the trial court was affirmed.

In response to the insurer's contention that the deceased "was not operating his automobile within the meaning of the policy at the time he was affected by the carbon monoxide gas," the court cited with approval a North Dakota decision in a similar case:

"To exclude the inhalation of carbon monoxide gas during a period when the car is stalled in a mudhole on the theory that motion had ceased would be not merely to adopt a narrow meaning of the language of the contract, but to actually deprive the words used of a portion of their ordinary meaning. The occupant of a car while it is stalled in a mudhole, particularly during a time when means of escape in comfort may well appear to be lacking, is still riding in the car in quite the same sense as a passenger upon a steamship at anchor may be riding the waves." *Johnson* v. *Fed. Life Insurance Co.*, 234 N. W. 661.

The insurer contended further that death was not the result of bodily injury caused by accidental means, within the meaning of the policy. With that contention, however, the Supreme Court of Appeals did not agree. The term "accidental means," said the court, has been variously defined, and the court accepted the view that an effect which is not the natural or probable consequence of the means which produced it, which does not ordinarily follow and cannot be reasonably anticipated from the use of those means, which the actor did not intend to produce, and which he cannot be charged with the design of producing under the maxim that every man must be held to intend the natural and probable consequence of his deeds, is produced by accidental means.—*Western Commercial Travelers' Association* v. *Smith*, (C. C. A.) 85 Fed. 401, 40 L. R. A. 653.

The court furthermore would not accept the contention of the insurer that Miller voluntarily exposed himself to the danger which caused his death. The odorless and tasteless nature of the insidious monoxide gas, said the court, prevents any intimation that the insured knowingly remained in a place of danger. While it is true that without the engine running, no carbon monoxide would have been produced, and that to the extent that Miller started the car and closed the windows his acts were voluntary, yet without some intervening factor

the natural and probable consequences of his acts would have produced no danger. That intervening factor was the proximity of the exhaust pipe to the ground, causing the poisonous gas to come into the car—which produced the unnatural condition and danger, a factor which cannot be attributed to the deceased and which was not one that occurs or is anticipated in the ordinary course of events under similar circumstances.

Workmen's Compensation Acts: Complications Following Industrial Accident Compensable.—The plaintiff, in the course of his employment, strained a sacro-iliac joint. Infection followed this strain, and complications arose in the sacro-iliac region, prolonging the disease and aggravating the plaintiff's condition. Ten physicians who testified concurred in the opinion that the plaintiff's condition had become worse because he had not received proper treatment immediately after the accident; that a strain of the sacro-iliac joint usually should be cured within a month or two, if properly treated and the patient made to rest; and that the plaintiff's condition at the time of the trial was such that he could not perform manual labor. On behalf of the defendant it was contended that the evidence did not establish that the injury to the plaintiff was the result of an accident occurring out of and in the course of his employment. We are of the opinion, said the court of appeal of Louisiana, second circuit, second division, that the evidence does establish with legal certainty that the plaintiff's condition is traceable to a strain sustained by him in the course of his employment. It is probably true that his continued disability has been contributed to by diseases independent of, or possibly connected with, the original injury, causing prolongation of the ailment and slowness of recovery. However, even if that is true, the right to recover compensation will not be unfavorably affected thereby. It is not necessary, in order to recover under the employers' liability act of Louisiana, that the continued disability resulted directly from the injury. It is sufficient if the disability is the result of a condition arising from the injury, or that the injury is a contributing cause of the disability.—*Anderson v. Louisiana Oil Refining Corporation (La.), 134 So. 343.*

Workmen's Compensation Acts: Right of Employee to Sue for Injury Due to Occupational Disease.—The plaintiff alleged that the disease of the lungs from which he suffered was due to the inhalation of particles of steel in the course of his employment. He attributed the inhalation of such particles to the failure of his employer to provide proper safeguards to protect its employees. Since the condition from which he suffered was admittedly not compensable under the workmen's compensation act of New Jersey, he brought suit against his employer, at common law, to recover damages. His employer, the defendant in this case, contended that it was the intent of the legislature to provide compensation for only the accidents and occupational diseases described in the statutes, and not only to exclude all other occupational diseases from compensation under the workmen's compensation act, but also to preclude a person from instituting an action at law to recover damages for an occupational disease not described in it. But, said the circuit court of New Jersey, Hudson county, if the legislature had intended to bar an action at common law for an occupational disease contracted through the negligence of an employer, it would have said so. The contention of the employer was therefore overruled.—*Szalkowski v. C. S. Osborne & Co. (N. J.), 154 Atl. 611.*

Privileged Communications: When Privilege Is Waived.—By the weight of authority, according to the Supreme Court of Oklahoma, the right to waive the benefit of a privileged communication statute survives a patient and may be exercised after his death by the beneficiary named in an insurance policy on the life of the deceased. The fact, however, that the beneficiary calls as a witness a physician who treated the deceased does not operate as a waiver of the privilege as to other physicians who treated him at other times, even though they attended him for the very ailment concerning which the physician called as a witness testified. The privilege is waived when the plaintiff testifies to the results of a particular examination by a physician, in which case the defendant may call the physician who made the examination, to corroborate or disprove the testimony of the plaintiff. It is waived, too, when two or more physicians in consultation examine the patient, and one of the examining physicians is called to testify concerning the results of the examination, in which case any other physician who took part in the same examination may be called by the opposing party. But if the physician whose evidence is proffered by the opposing party made his examination at a different time, and the plaintiff himself has not testified concerning the results of the examination made by the proffered witness, the evidence of that witness is inadmissible.—*United States Nat'l Life & Casualty Co. v. Heard (Okla.), 298 P. 619.*

Society Proceedings

COMING MEETINGS

American Medical Association, New Orleans, May 9-13. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

Alabama, Medical Association of the State of, Mobile, April 19-22. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association for Thoracic Surgery, Ann Arbor, Mich., April 18-20. Dr. Duff S. Allen, 3720 Washington Blvd., St. Louis, Sec'y.

American Association of Anatomists, New York, March 24-26. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Philadelphia, April 28-29. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

American Association of Physical Anthropologists, Washington, D. C., March 21-23. Dr. D. J. Morton, 632 W. 168th St., New York, Sec'y.

American Climatological and Clinical Association, Atlantic City, May 5-7. Dr. Arthur K. Stone, Auburn Street, Framingham Center, Mass., Secretary.

American College of Physicians, San Francisco, April 4-8. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.

American Dermatological Association, Havana, Cuba, May 3-5. Dr. William H. Guy, 500 Penn Avenue, Pittsburgh, Secretary.

American Gastro-Enterological Association, Atlantic City, May 2-3. Dr. Charles G. Lucas, 307 West Broadway, Louisville, Secretary.

American Heart Association, New Orleans, May 10. Dr. Irl C. Riggin, 450 Seventh Avenue, New York, Executive Secretary.

American Physiological Society, Philadelphia, April 28-30. Dr. Arno B. Luckhardt, 5216 Greenwood Avenue, Chicago, Secretary.

American Proctologic Society, Memphis, May 6-7. Dr. Curtice Rosser, 710 Medical Arts Building, Dallas, Texas, Secretary.

American Society for Clinical Investigation, Atlantic City, May 2. Dr. Cyrus C. Sturgis, Simpson Memorial Institute, Ann Arbor, Mich., Secretary.

American Society for Experimental Pathology, Philadelphia, April 28-30. Dr. C. Phillip Miller, Jr., University of Chicago, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Philadelphia, April 27-30. Dr. V. E. Henderson, University of Toronto, Toronto, Secretary.

American Society of Biological Chemistry, Philadelphia, April 28-30. Dr. H. B. Lewis, University of Michigan Medical School, Ann Arbor, Secretary.

American Society of Clinical Pathologists, New Orleans, May 6-9. Dr. A. S. Giordano, 531 North Main Street, South Bend, Ind., Secretary.

Arizona State Medical Association, Globe, April 21-23. Dr. D. F. Harbridge, 407 Goodrich Building, Phoenix, Secretary.

Arkansas Medical Society, Little Rock, April 5-7. Dr. William R. Bathurst, 814 Boyle Building, Little Rock, Secretary.

Association for the Study of Internal Secretions, New Orleans, May 9-10. Dr. F. M. Pottenger, 1930 Wilshire Boulevard, Los Angeles, Secretary.

Association of American Physicians, Atlantic City, May 3-4. Dr. James H. Means, Massachusetts General Hospital, Boston, Secretary.

California Medical Association, Pasadena, May 2-5. Dr. Emma W. Pope, 450 Sutter Street, San Francisco, Secretary.

District of Columbia, Medical Society of the, Washington, D. C., May 4-5. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, D. C., Secretary.

Florida Medical Association, Sarasota, May 3-4. Dr. Shaler Richardson, 111 West Adams Street, Jacksonville, Secretary.

Iowa State Medical Society, Sioux City, May 4-6. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.

Kansas Medical Society, Kansas City, May 3-5. Dr. J. F. Hassig, 804 Huron Building, Kansas City, Secretary.

Louisiana State Medical Society, New Orleans, May 9-10. Dr. P. T. Talbot, 1430 Tulane Avenue, New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, April 26-27. Dr. Walter Dent Wise, 1211 Cathedral Street, Baltimore, Secretary.

Medical Society of the Missouri Valley, Omaha, Neb., March 29-31. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Medical Women's National Association, New Orleans, May 8-9. Dr. Sylvia Allan, Winthrop College, Rock Hill, S. C., Secretary.

Mississippi State Medical Association, Jackson, April 12-14. Dr. T. M. Dye, Clarksdale, Secretary.

North Carolina, Medical Society of the State of, Winston-Salem, April 18-20. Dr. L. B. McBrayer, Southern Pines, Secretary.

Ohio State Medical Association, Dayton, May 3-4. Mr. Don K. Martin, 131 East State Street, Columbus, Executive Secretary.

South Carolina Medical Association, Columbia, April 19-21. Dr. E. A. Hines, Seneca, Secretary.

Tennessee State Medical Association, Memphis, April 12-14. Dr. H. H. Shoulders, 706 Church Street, Nashville, Secretary.

Texas, State Medical Association of, Waco, May 5-7. Dr. Holman Taylor, Medical Arts Building, Fort Worth, Secretary.

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Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Pathology, Boston

8: 1-121 (Jan.) 1932

*Renal Lesions in Toxemias of Pregnancy. E. T. Bell, Minneapolis.—p. 1.
Infectious Oral Papillomatosis of Dogs. W. A. DeMonbreun and E. W. Goodpasture, Nashville, Tenn.—p. 43.
*Tularemic Encephalitis: Pathology of Acute Tularemia with Brain Involvement and Coexisting Tuberculosis. F. W. Hartman, Detroit. —p. 57.
Study of Vaccine Virus Pneumonia in Rabbits. R. S. Muckenfuss, H. A. McCordock and J. S. Harter, St. Louis.—p. 63.
*Frequency of Anomalous Reticula in Right Atrium of Human Heart "Chiari Network": Eight Cases. F. C. Helwig, Kansas City, Mo. —p. 73.
Syphilitic Aortic Endocarditis and Superimposed Bacterial (Streptococcus Viridans) Endocarditis. E. B. Craven, Jr., Durham, N. C. —p. 81.
Quantitative Observations on Valves of Human Heart. P. Gross and R. A. Moore, Cleveland.—p. 91.
Formation of Bone Marrow in Suprarenal Gland. D. C. Collins, Rochester, Minn.—p. 97.
Multiple Infarcts and Necroses of Spleen (Fleckmilz). G. Rake, Heidelberg, Germany.—p. 107.
Tumors in Captive Primates: Two Cases. H. L. Ratcliffe, Philadelphia. —p. 117.

Renal Lesions in Toxemias of Pregnancy.—Bell states that in fatal cases of eclampsia a characteristic glomerular lesion is found. The glomeruli show a marked narrowing of all their capillaries, caused usually by an increase in thickness of the capillary basement membrane, but sometimes by an increase of endothelial cells. One case is reported in which the lesions resulting from an attack of eclampsia seven years before are described. These consisted of focal hyaline areas in the glomeruli with partial or complete glomerular obliteration and varying degrees of tubular atrophy. It is shown that a peculiar form of chronic renal disease may result from the eclamptic kidney. In one case of hyperemesis gravidarum, glomerular lesions were found which corresponded entirely to those of typical eclampsia. In three other cases the glomeruli were normal. A fatty liver without necroses is characteristic of this form of toxemia. When a woman with chronic renal disease becomes pregnant, there is usually an aggravation of all the nephritic symptoms. The condition cannot be distinguished from preeclampsia and eclampsia unless the condition of the kidneys prior to pregnancy is known, or unless there is a definite impairment of renal function. Women with chronic nephritis do not show a special tendency to develop gestation eclampsia.

Tularemic Encephalitis.—Hartman describes a case of acute tularemia with diffuse encephalitis and coexisting tuberculosis of the kidney and epididymis. The brain lesions were readily seen as areas of yellow necrosis and hemorrhage throughout the base. Microscopically there was patchy necrosis with infiltration of round cells, wandering cells, and polymorphonuclear leukocytes.

Frequency of Anomalous Reticula in Right Atrium of Human Heart "Chiari Network."—Helwig defines a true "Chiari network" as an anomaly which is formed of strands and reticula which stretch from the thebesian and eustachian valves across the right auricle to insert either into the crista terminalis or the endocardium near the tubercle of Lower. Several explanations of this anomaly have been proposed to account for its development. Chiari thought that it was a remnant of the right venous valve of the septum spurium. Looser believed that it arose from a dislocation of the fibers from their normal points and took place as a result of irregularity in endocardial growth. Jordan, in reporting two cases, was inclined to the view that the network was formed from remnants of portions of the valves of the right horn of the sinus venosus. Since Chiari's publication, fifteen additional cases have been studied and added to the literature. From the small number of reported instances of this anomaly one might assume that these structures are quite rare, while the author's observations lead him to believe that the contrary is true. In a series of 466 necropsy examinations conducted at St. Luke's Hospital from Jan. 1, 1928, to July 1, 1931, a period of three and a half years, seven hearts showing this anomaly were seen, an incidence of 1.5 per cent.

American Journal of Public Health, New York

12: 1-126 (Jan.) 1932

Cost of Sanitary Survey of Streams. W. L. Stevenson, Harrisburg, Pa. —p. 1.
*Diphtheria Toxin-Antitoxin and Toxoid: A Comparison. W. H. Park and May C. Schroder, New York.—p. 7.
*Advantages of Toxoid in Diphtheria Prophylaxis. W. T. Harrison, Washington, D. C.—p. 17.
Experiences with Diphtheria Toxoid in Canada. J. G. Fitzgerald, R. D. Defries, D. T. Fraser, P. J. Moloney and N. E. McKinnon, Toronto, Canada.—p. 25.
Degree of Immunization from Injection of Diphtheria Toxoid: (a) of Different Strength Toxoids, (b) at Varying Intervals, (c) of Treated Toxoids. O. R. Povitzky, New York.—p. 29.
Preparation of Stabilized Schick Toxin. P. J. Moloney and Edith M. Taylor, Toronto, Canada.—p. 38.
What Can a Community Do When It Is Not Yet Ready to Establish a Mental Hygiene Clinic? H. G. Weiskotten, Syracuse.—p. 44.
Marketing Mass Education. H. N. Calver and B. Brown, New York. —p. 49.
Health Aims and Professional Services: Infancy, Preschool and School Ages: Medium City. W. W. Bauer, Racine, Wis.—p. 59.
Accuracy of Counting an Agar Plate. F. L. Schacht and A. H. Robertson, Albany, N. Y.—p. 80.

Diphtheria Toxin-Antitoxin and Toxoid.—Park and Schroder state that the immunizing effects of their best toxoid have been better than from the best properly standardized toxin-antitoxin. They have therefore recently adopted the toxoid (Ramon) for the children of preschool age in New York City but continue to use toxin-antitoxin for the school children and for such adults as, for instance, nurses, who require it. They may soon employ the toxoid entirely, especially if they are able to reduce the substances in it which cause pseudoreactions.

Advantages of Toxoid in Diphtheria Prophylaxis.—Harrison summarizes the advantages of diphtheria toxoid over toxin-antitoxin mixture as follows: 1. It is from 20 to 30 per cent more effective, even when only two doses are given. 2. It contains no serum or other animal protein likely to sensitize to a later therapeutic serum injection. 3. It is absolutely without local or general reaction in practically all children under 7 years of age. Reactions in older children and adults are only unpleasant, not dangerous. 4. It contains no free toxin. 5. It is more stable, retaining its effectiveness for a longer period, and is not affected by freezing.

American Journal of Surgery, New York

15: 1-218 (Jan.) 1932

*Tribromethanol-Amylenehydrate ("Avertin" Fluid): Report of Three Hundred and Fourteen Basal Anesthesias Administered to Two Hundred and Twenty-Five Patients. E. F. Goldschmidt and A. M. Hunt, New Haven, Conn.—p. 1.
Uretero-Intestinal Anastomosis: Simplification of Coffey Technic. H. D. Furniss, New York.—p. 12.
*Transplantation of Ureters to Rectosigmoid and Cystectomy for Exstrophy of Bladder: Seventy-Six Cases. W. Walters, Rochester, Minn.—p. 15.
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Prolapse of Rectum and Uterus in Same Patient. E. P. McDonald, Albany, N. Y.—p. 47.
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New Bone Lengthening Apparatus for Femur. G. K. Coonse, Columbia, Mo.—p. 68.

Intra-Articular Stabilization of Recurring Dislocation of Shoulder: Technic of Suspension of Acromium by Autogenous Fascia Lata Suture. C. M. Gratz, Assisted by R. P. Robison, New York.—p. 71.
*Operative Cure of Hallux Valgus and Bunions. S. Kleinberg, New York.—p. 75.
Osteomyelitis of Vertebrae: Two Cases Simulating Perinephric Abscess. J. A. Lazarus, New York.—p. 82.
Method of Inserting Blood Transfusion Needles into Veins. J. M. Scannell, Jamaica, N. Y.—p. 88.
Spinal Anesthesia Records. R. C. Webb, Minneapolis.—p. 91.
Healing of Chronic Duodenal Ulcers. T. L. Bliss, Rochester, Minn.—p. 93.
Adenocarcinoma of Sigmoid with Metastasis to Eye. C. F. Dixon and W. L. Benedict, Rochester, Minn.—p. 99.
Traumatic Rupture of Stomach: Two Cases. C. R. Fancher and M. G. Barmore, Oakland, Calif.—p. 101.
Treatment of Certain Cases of Duodenal Ulcer by Jejunostomy, with Application of Some Newer Physiologic Principles and Use of Electric Feeding Pump. E. H. Mensing, Milwaukee.—p. 105.
Gastrocholecystic Fistula: Case. J. O. Rankin, Wheeling, W. Va.—p. 109.
*Acidosis Treatment of Inoperable Malignant Tumors. W. Meyer, New York.—p. 112.
Diagnosis of Ureteral Calculi and Problem of Their Conservative Management. A. M. Crance, Geneva, N. Y.—p. 120.
*An Electrosurgical Rongeur. G. E. Ward, Baltimore.—p. 130.
Clinical Management of Horseshoe Kidney. Part II. R. Gutierrez New York.—p. 132.

Tribromethanol-Amylenehydrate ("Avertin" Fluid).—Goldschmidt and Hunt present their experiences with 314 basal anesthesias with "avertin" administered to 225 patients. The drug was instilled by rectum as a 2.5 per cent solution in distilled water, usually in doses varying between 0.08 and 0.1 Gm. per kilogram of body weight, to patients of both sexes between the ages of 2 and 73 years, for operations requiring surgical anesthesia. Parenchymatous liver damage and extensive bilateral kidney disease are the only contraindications for the use of this anesthesia. It is concluded that, administered in sufficient doses, no less than 0.08 Gm. per kilogram of body weight, "avertin" fluid produces a good basal anesthesia. In only about 3.5 per cent of the cases was a satisfactory action not observed. In about 24 per cent of the cases full surgical anesthesia was obtained; in about 20 per cent the basal anesthesia was supplemented with local anesthesia (procaine); in the remaining cases ether, ethylene, oxygen, nitrous oxide, oxygen or a combination was employed at various phases of the operation. In all instances the necessary dose of the supplemental inhalation anesthetic, however, was only a fraction of the amount usually required for the operation performed. A temporary fall in the systolic blood pressure of about 19 mm. of mercury in men and 28 mm. in women occurred following the instillation. Studies with the cardiotachometer of Boas showed that the abrupt changes in heart rate produced by excitement at the beginning and the end of the anesthesia were markedly reduced or practically absent. The most striking of the advantages in the use of this basal anesthesia is the complete amnesia observed in all patients, they having no recollection whatever of the events following the instillation of the "avertin."

Transplantation of Ureters.—Walters reports the results obtained in transplantation of ureters to the rectosigmoid and removal of the exstrophied bladder in a group of seventy-six patients operated on at the Mayo Clinic. The method of transplantations was first used by C. H. Mayo in February, 1912; he applied Coffey's principle of submucous duct transplantation to the ureter. The operative procedures have been divided into three stages: (1) transplantation of the right ureter into the rectosigmoid, (2) two weeks later transplantation of the left ureter, and (3) ten days later removal of the exstrophied bladder. In none of the cases were ureteral catheters used in the transplantation. Three patients died in the hospital subsequent to operation. Twenty-seven patients have lived five years since the operation, and thirteen have lived ten years. Results were unsatisfactory in only three cases. In 50 per cent of the cases there was no evidence of renal infection. In 21 per cent there were short periods of mild renal infection; the interval between such periods in most cases was many months, sometimes years. The infection, too, was mild and apparently had little effect on the patient. The use of compounds such as iopax intravenously has made possible the study of renal function as well as of the outline of the renal pelvis and ureter in many of these cases. The use of this method and other methods of study of renal function leads to the belief that renal function is normal and that there is no dilatation of the pelvis, calices or ureters in cases in which the ureterosigmoidal transplantation is accurately carried out.

Lumbosacral Sympathetic Ganglionectomy.—Ito and Asami give a clinical account of twenty-seven cases of thrombo-angiitis obliterans together with a brief description of the technic of operation developed in their clinic in which the lower lumbar and upper sacral ganglions are removed with the intervening cord. A brief description of the animal experiments performed in their laboratory, showing the definite increase in the volume flow of blood through the homolateral limb, and facilitation of wound healing thereby, is given. In the treatment of the symptom groups of thrombo-angiitis obliterans, apparently permanent and complete cure is obtained by the lumbar and lumbosacral sympathicoganglionectomy in their earlier stage of intermittent claudication. With the development of gangrene and obliteration of the popliteal or tibial artery, on the other hand, the result of the operation is not satisfactory. Obviously, therefore, such patients should be operated on at the earliest possible stage of the disease. The authors present clinical evidences contradictory to the doctrine of sympathetic tonic innervation of the skeletal musculature.

Operative Cure of Hallux Valgus and Bunions.—Kleinberg believes that the main basic factors in the etiology of hallux valgus and bunions are the adduction of the metatarsal bone of the great toe and the obliquity of its tarsometatarsal joint. The conspicuous and obvious causes of discomfort and disability are the valgus of the great toe, bony overgrowth at the base of the great toe and the overlying bursa or bunion. The author's operation aims to correct all the pathologic changes without disturbing the function of the great toe joint or weight bearing surface of the head of the first metatarsal. The adduction of the first metatarsal bone is corrected by the removal of a double wedge from the tarsometatarsal joint, the mobilization of the metatarsal bone, and the manual approximation of the first and the second metatarsal. The overgrowth of bone on the head of the metatarsal and the bunion are excised through a separate incision. The correction of the valgus of the great toe is assured by securing to the metatarsal bone a tongue of strong tissue, consisting of bursal wall and capsule, which is attached to the base of the phalanx. Care is exercised not to remove or in any way disturb the articulating portion of the head of the metatarsal bone. This accomplishes two results; namely, the support of the forefoot is not altered and the mobility of the great toe is not diminished. By bringing the great toe into line with the inner border of the foot, the sesamoid bones are returned to their normal relation to the head of the metatarsal, and the dorsal and plantar tendons of the great toe are brought into a normal or nearly normal position, where they can function properly.

Acidosis Treatment of Inoperable Malignant Tumors.—Meyer states that in patients afflicted with technically inoperable cancer, with or without metastases, all factors known to produce acidosis of the blood, properly selected, combined and adapted to the case in hand should be put into operation as quickly and as vigorously as possible. The biologic acidosis treatment of inoperable malignant tumors must be worked out further by cooperative efforts of the members of the medical and affiliated professions. The author believes that those who are working along the lines of acidosis treatment of patients afflicted with inoperable malignant tumors are on the right track.

Electrosurgical Rongeur.—Ward has devised an efficient electrosurgical bone rongeur by attaching a binding post to the usual form of rongeur for the connection of the cable from the electrosurgical generator. With this rongeur, otherwise inoperable, malignant bone is removed in dead pieces without danger of metastasis.

Archives of Dermatology and Syphilology, Chicago

25: 1-204 (Jan.) 1932

*Mycosis Fungoides as Clinical and Pathologic Nonexistent. D. Symmers, New York.—p. 1.
True Sugar Content of Skin in Diabetes. H. C. Trimble and B. W. Carey, Jr., Boston.—p. 6.
Nitrogen and Sulphur Content of Scales in Psoriasis and Exfoliative Dermatitis. A. Strickler and P. D. Adams, Philadelphia.—p. 11.
*Sunburn Tanning: Comment on Action of Light on Skin. H. Goodman, New York.—p. 15.

*Chemical and Electrolytic Lesions of Mouth Caused by Artificial Dentures. E. S. Lain, Oklahoma City.—p. 21.
*Exfoliative Dermatitis, Jaundice and Melanoderma Following Use of Neoarsphenamine: Case. F. Ronchese, Providence, R. I.—p. 33.
Trichostasis Spinulosa. J. F. Burgess, Montreal, Canada.—p. 40.
*Chronic Coccidioidal Dermatitis: Unusual Case. W. P. Zeisler, Chicago.—p. 52.
Generalized Scleroderma in Children: Three Cases and Review of Literature. E. L. Oliver, Boston.—p. 72.
*Demodex Folliculorum: Its Rôle in Etiology of Acne Rosacea. S. Ayers, Jr., and N. P. Anderson, Los Angeles.—p. 89.
*Acquired Progressive Kinking of Scalp Hair Accompanied by Changes in Its Pigmentation: Correlation of Unidentified Group of Cases Presenting Circumscribed Areas of Kinky Hair. F. Wise and Marion B. Sulzberger, New York.—p. 99.
Erythema Annulare Centrifugum. J. Butler, Minneapolis.—p. 111.
Granuloma Annulare Disseminatum: Two Cases. S. Monash, New York.—p. 122.
Pityriasis Lichenoides et Varioliformis Acuta: Case. L. Savatard, Manchester, England.—p. 132.
Pemphigus: Recovery Following Long-Continued Colonic Irrigations and Arsenic by Mouth. J. F. Schamberg, Philadelphia.—p. 134.

Mycosis Fungoides.—Symmers is of the opinion that postmortem and histologic observations show that mycosis fungoides is the cutaneous expression of at least three different diseases of the lymph node system: Hodgkin's disease; a variety of round cell sarcoma arising from the connective tissue reticulum of lymph nodes or elsewhere, and lymphosarcoma, originating in the lymphoid cells of the lymph nodes or of other lymphoid structures—in short, that mycosis fungoides as an independent form of disease does not exist.

Sunburn Tanning.—Goodman reviews the factors of pigmentation of the normal skin and discusses the features of induction of pigmentation of the white man's skin by radiation from solar and artificial sources. The subject of sensitizing the skin to make it more amenable to the production of pigment through erythema-producing radiation is touched on, particularly as it affects cosmetic tanning, photogenic diseases and eruptions of the skin partially responding to solar radiation. This entire subject of the biology of pigment in relation to vital ultraviolet radiation is important in view of the wide use of emanators of this type of radiation and the equally wide use of medicines of the coal tar derivative group, since it appears that coal tar quotients by ingestion in some persons induce a sensitivity to ultraviolet radiation. Local responses to the topical application of coal tar products and to erythema-producing ultraviolet rays produce conflicting results as far as pigmentation is concerned. Such a combination is offered in the treatment for vitiligo and leukoderma, and a like combination is also offered as the solution of the etiology of perfume dermatitis. The author believes that the biologic reaction of the skin to sources of light must also be considered in cancer of exposed surfaces of the skin and in some industrial dermatoses.

Mouth Lesions from Artificial Dentures.—In routine examination of the mouths of forty-five consecutive adults wearing full plate dentures, Lain noted that 42 per cent had either stomatitis or glossitis. It was found that many of these cases were due to neglected oral hygiene, malocclusion or trauma caused by imperfect adaptation of the plates to the alveolar processes. In several cases, however, after all ordinary etiologic factors had been eliminated, it was concluded that the poisonous constituents of the dental plates were the offending agents. Analyses of the plates in two of these cases revealed porosity with free mercury sulphide and sulphur in one, and aluminum powder with a trace of zinc in the other. Macroscopic and microscopic examination of other offending plates indicated undercuring with porosity. Each of thirty consecutive adults examined, whose mouths contained two or more metals of different potentialities, registered from 1 to 40 degrees of galvanic current on the micro-ammeter. One case of a metallic upper plate with amalgam fillings below registered a dangerously high degree of current. A large percentage of the patients complained of symptoms, such as metallic taste, burning tongue and acute dental nerve sensations, or presented visible mucous lesions adjacent to or between metallic dentures, from which, after a process of elimination, it was concluded that the etiologic factors were galvanic discharges.

Neoarsphenamine Intoxication.—Ronchese reports a case of dermatitis with jaundice followed by a generalized melanoderma, respecting, as did the erythrodermia, the areas previously the site of a roseola, following the use of neoarsphenamine. He calls attention to the fact that the absence of erythrodermia and pigmentation in these areas, leading to a picture of a leukomelanoderma, should help to demonstrate the pathogenesis of the syphilitic leukoderma as due to a secondary hyperpigmentation of the skin surrounding the sites of a previous noticed or unnoticed syphiloderma.

Coccidioidal Dermatitis.—Zeisler describes an unusual case of widespread dermic infection with Coccidioides immitis. The patient presented a combination of nodular, crusted, granulomatous lesions resembling mycosis fungoides, with lichenoid papules simulating miliary lupus and pigmented, atrophic, annular scars. In the later stages, the papillomatous and verrucose character of the eruption gave rise to a close clinical resemblance to blastomycosis. The chronic nature of the dermic lesions and the absence of demonstrable subcutaneous, glandular, pulmonary or osseous lesions suggests the term, chronic coccidioidal dermatitis as an appropriate one for this type of case. The skin as the portal of entry of the infection, and the possibility of animals being carriers of the disease is suggested by the history of the case. The temporarily favorable results of treatment with alternating courses of colloidal copper and antimony and potassium tartrate, and roentgen therapy, locally, are recorded. The histologic changes produced by the growth of Coccidioides immitis in the tissues in the form of nodules surrounding the blood vessels suggests dissemination by the blood stream. A peculiar type of segmental endosporulation is described which has been observed only once before, by Rixford and Gilchrist. The gross and the histologic changes produced in experimentally infected guinea-pigs are described and the parallelism to human infection is noted.

Demodex Folliculorum.—Ayres and Anderson report seventeen cases of acne rosacea in which Demodex folliculorum was found in moderate to large numbers either in pus from superficial lesions or in dry follicular scales, whereas it was absent from the pus in thirteen consecutive cases of acne vulgaris. Following the use of a strong antiparasitic ointment and the daily use of soap and water in twelve of the cases, the acne rosacea was either improved or clinically cured in all instances. Accompanying the clinical disappearance of the lesions of acne rosacea, Demodex folliculorum was present in correspondingly fewer numbers, and in some cases there was a total disappearance of the organisms. On the basis of their observations the authors conclude that Demodex folliculorum is one of several possible causes of acne rosacea.

Kinking of Scalp Hair.—The report of Wise and Sulzberger deals with an anomaly of hair growth and hair color which apparently is unique in medical literature. The patient was a man, aged 21, who complained that his light brown, straight and exceptionally vigorous head of hair had begun to undergo a change about two years before he consulted the authors, with the result that the frontal, temporal and parietal portions of the scalp hair had become "wooly and kinky" and had changed from light brown to black. This curious change in physical character and color was progressive and rather rapidly advancing, in that an extension of the process took place while the man was under observation. The kinky hair was pigmented in shades varying from dark brown to black. The shafts were much thinner than those of the straight hairs, their diameters being from one-half to one-fourth narrower than those of the straight hairs. While the majority of these kinky hairs exhibited no structural changes deviating from the normal, a small proportion of the specimens presented little globular and roughly spindle-shaped swellings of the shafts, and not more than two or three of them affected an individual hair from end to end. These dilated areas showed no difference in cellular structure as compared with other parts of the shaft. Close to the distal ends of many of these hairs, the shaft was split in two or three segments.

Florida Medical Association Journal, Jacksonville

18: 257-304 (Dec.) 1931

Chronic Compression Stenosis of Duodenum: Report of Case Presenting Unusual Features. J. S. Helms, Tampa.—p. 265.
Sterility. F. Richards, Jacksonville.—p. 273.
Poliomyelitis. H. M. Smith, Tampa.—p. 278.
Use of Local Anesthesia in Treatment of Fractures. J. M. Hoffman, Pensacola.—p. 281.
Spinal Anesthesia. C. Anderson, Tampa.—p. 283.

Georgia Medical Association Journal, Atlanta

20: 457-498 (Dec.) 1931

Bacteriologic Facts and Fancies. L. Howard, Savannah.—p. 457.
Early Diagnosis of Tuberculosis in Children. T. I. Willingham, Atlanta. —p. 462.
Cancer: Chapter VII. J. L. Campbell, Atlanta.—p. 465.

Illinois Medical Journal, Chicago

61: 1-88 (Jan.) 1932

Review of Some of Advances in Gastro-Intestinal Diseases. J. G. Beykirch, East St. Louis.—p. 17.
Clinical Significance of Roentgenologic Observations of Stomach and Duodenum. S. A. Portis, Chicago.—p. 19.
Factors in Reduction of Thyroid Mortality. F. Christopher, Evanston. —p. 23.
Hindsight: Or How to Live a Hundred Years. H. T. Byford, Chicago. —p. 25.
Acute Prostatitis Secondary to Extragenital Infections: Report of Cases. C. O. Ritch, Chicago.—p. 28.
*Effect of Vitamin B Complex Depletion on Infant Mortality: Experimental and Statistical Study. S. Maurer and Loh Seng Tsai, Chicago. —p. 30.
Accommodation and Acquired Hyperopia in Diabetes Mellitus. C. W. Geiger and J. H. Roth, Kankakee.—p. 34.
Some Pitfalls in Diagnosis of Acute Abdominal Conditions. J. K. Narat, Chicago.—p. 37.
Hay Fever Sinus Infections and Asthma. J. Shanks, Chicago.—p. 40.
Résumé of Study of Serology and Blood Chemistry of One Hundred Consecutive Cases. M. Zeller and L. J. Murphy, Chicago.—p. 42.
*Intra-Abdominal Hemorrhage from Ruptured Corpus Luteum Cysts. P. W. Greeley, Winnetka.—p. 44.
Hodgkin's Disease of Mediastinum: Case. D. Klemptner, Chicago. —p. 46.
Luetic Aortitis: Clinicopathologic Résumé. L. Feldman, Chicago.—p. 48.
Treatment of Pulmonary Tuberculosis. J. Head, Chicago.—p. 54.
Nontuberculous Spontaneous Pneumothorax. M. Biesenthal and M. Snyder, Chicago.—p. 56.
Factors Influencing Successful Prostatectomy. F. M. Phifer and A. J. Sullivan, Chicago.—p. 58.
*Rat-Bite Fever Transmitted by a Cat Bite. H. E. Mock and A. R. Morrow, Chicago.—p. 67.
Roentgen-Ray Observations of Pneumonoconiosis. F. Flinn, Decatur. —p. 70.
*Restlessness in Infancy. J. Carey, Joliet.—p. 76.
*Management of Chronic Arterial Occlusions of Extremities. G. de Takáts, Chicago.—p. 79.

Effect of Vitamin B Complex Depletion on Infant Mortality.—Maurer and Loh Seng Tsai report that an analysis of the mortality of infants who die the first year, in Illinois, shows that 44 per cent die under 1 week of age. The decrease in infant mortality from 1925 to 1928 of infants under 1 year of age was 1,488, while there was a decrease in the group who die under 1 week of only 213. The infant mortality of the offspring of mother rats receiving a diet which is adequate only for normal maintenance of a nonpregnant rat is high, 71 per cent, as compared with 8.5 per cent normal mothers, for animals under 3 days of age, an age equivalent to about 1 week in the human infant. A female rat which, during the period of gestation or while a nursling, has received only sufficient vitamin B complex for maintenance when not pregnant, suffers a dystocia. Analysis by Goldberger of the food consumption of wage earners shows that December, January, February, March, April, May and June are months in which the diet contains less than the optimal maintenance of vitamin B complex, and Illinois statistics show that there is a higher mortality of infants less than 1 month of age during these months than during August, September, October and November, the four months of lowest infant mortality. The months of lowest mortality of infants under 1 month of age are the months in which the mothers have had two or more months of a diet containing more vitamin B complex than maintenance just prior to the birth of the child. The ordinary minimal maintenance diet, from a standpoint of vitamin B complex, must be practically doubled during pregnancy in order that a strong, healthy offspring may be produced with the least damage to the mother.

Intra-Abdominal Hemorrhage from Ruptured Corpus Luteum Cysts.—Greeley emphasizes the fact that, in examining a female patient for an acute abdominal lesion, the possibility of intraperitoneal hemorrhage from a ruptured corpus luteum cyst must not be overlooked. Bleeding from a ruptured ectopic pregnancy, although quite common, usually gives a history of symptoms pointing toward a pregnancy, which are not usually found in ruptured corpus luteum cyst. A history of recent trauma to the lower part of the abdomen may be a highly significant factor in making the preoperative diagnosis of lower abdominal pain.

Rat-Bite Fever Transmitted by a Cat Bite.—Mock and Morrow state that rat-bite fever is probably overlooked more frequently than is realized. The mortal enemy of the rat, the house cat, may act as the medium for the transmission of the etiologic factor of rat-bite fever. There is a specific treatment —neoarsphenamine—in small divided doses. If in the course of employment an individual is bitten by a rat or a cat and later develops this peculiar type of relapsing fever, the case at once develops a medicolegal aspect. The question of employee's compensation for an accident must be met.

Restlessness in Infancy.—According to Carey, certain babies are born with, or develop shortly after birth, a hyperactive vagus associated with distention, due to spasm of certain areas of the gastro-intestinal canal producing pain and restlessness. Under proper placid surroundings and attendants, these babies are less likely to exhibit mental disorders in later life. Atropine in proper dosage acts as a specific in those cases of nervous origin. Roentgen therapy while tried in only a few cases, appears to be of decided value.

Management of Chronic Arterial Occlusions of Extremities.—De Takáts calls attention to the fact that the proper management of peripheral vascular diseases requires an exact determination of the type and extent of vascular disturbance. Spasms should be differentiated from organic obstructions. The early diagnosis of these cases is in the hands of the general practitioner. The surgeon usually sees the late stages in the form of irreparable damage. When the diagnosis and level of circulatory impairment are determined early, conservative treatment is often successful. The author briefly discusses various forms of treatment and the indications for surgical operations.

Indiana State Medical Society Journal, Fort Wayne

25: 1-54 (Jan.) 1932

Filtrable Forms of Commonly Known Bacteria. T. B. Rice, Indianapolis. —p. 1.
Treatment of Common Skin Diseases. G. B. Underwood, Evansville. —p. 5.
Rationalization of Treatment of Cellulitis of Hand. T. B. Noble, Jr., Indianapolis.—p. 12.
Malpractice Insurance: (Theories and Facts). C. A. Stayton, Indianapolis.—p. 16.
Status Quo of Medical Profession. J. C. Boone, South Bend.—p. 18.

Iowa State Medical Society Journal, Des Moines

22: 1-58 (Jan.) 1932

Retroversion of Uterus: Factors in Its Production. N. F. Miller, Ann Arbor, Mich.—p. 1.
Compressed Fractures of Spine: "Jack" Decompression. A. F. O'Donoghue, Sioux City.—p. 8.
Gastric and Duodenal Ulcer: I. Roentgen-Ray Signs of Gastric and Duodenal Ulcer. H. C. Bone, Des Moines.—p. 13.
Id.: II. Complications of Gastric and Duodenal Ulcers. H. H. Dilley, Des Moines.—p. 16.
Id.: III. Treatment of Uncomplicated Cases of Gastric and Duodenal Ulcers. J. T. Strawn, Des Moines.—p. 19.
Surgical Aspect of Carcinoma of Stomach. J. B. Synhorst, Des Moines. —p. 25.
Some Fundamental Considerations in Injection Treatment of Hemorrhoids. W. A. Fansler, Minneapolis.—p. 27.
Bilateral Extra-Uterine Pregnancy: Case. Florence D. Johnston, Cedar Rapids.—p. 29.
Rat-Bite Fever Caused by Bite of Wild Mouse: Case. H. R. Jenkinson and C. F. Jordan, Iowa City.—p. 31.

Johns Hopkins Hospital Bulletin, Baltimore

50: 1-56 (Jan.) 1932

Address on the Occasion of Presentation of the Howell Plaque to Johns Hopkins University, June 9, 1931. J. M. T. Finney, Baltimore.—p. 1.
Methods and Medicine. W. T. Longcope, Baltimore.—p. 4.
*Pellagra: Analysis of One Hundred and Two Cases. T. R. Boggs and P. Padget, Baltimore.—p. 21.
Hypophysectomy in Monkey (Macacus Rhesus). W. M. Firor, Baltimore.—p. 33.
*Fetal Blood Studies: III. Chemical Nature of Asphyxia Neonatorum and Its Bearing on Certain Practical Problems. N. J. Eastman, Baltimore.—p. 39.

Pellagra.—Boggs and Padget present an analysis of 102 cases of pellagra. The analysis was undertaken primarily because of the relative increase of the disease in recent years,

and also to see whether there was any foundation for the impression held by some that postalcoholic pellagra is different from the type. Thirty-one of the cases were of simple variety; forty were postalcoholic, and in thirty-one cases the disease arose as a complication of some other malady. The alcoholic variety of pellagra has become more than four times as common since the enactment of prohibition. The clinical features of the disease are pointed out, the diagnosis is discussed, and the observation is made that there exists no difference between the three types. Treatment is considered, with particular emphasis on the value of the liver diet, the dry treatment of the skin lesions, and the not too vigorous treatment of the stomatitis. Various theories as to the etiologic relationship between alcohol and pellagra are considered. Attention is called to the common occurrence of pellagra as a complication of debilitating disease.

Fetal Blood Studies.—Eastman reports a study of the carbon dioxide content, the carbon dioxide tension and the hydrogen ion concentration of fetal blood in normal and in asphyxiated babies. He observed that the carbon dioxide tension of fetal blood is normally higher than that of the maternal arm vein, the carbon dioxide diffusion gradient between fetus and mother being about 1.3 to 1. The elevated carbon dioxide tension of the mixed fetal blood supplying the brain of the fetus is difficult to reconcile with the apneic state of the fetus in utero and at present necessitates the assumption that the sensitivity of the fetal respiratory center, in respect to carbon dioxide at least, is definitely depressed. The primary blood chemical change in asphyxia neonatorum is a reduction in the oxygen content of the fetal blood to extremely low levels, the blood of the umbilical vein falling in fatal cases below one volume per cent. The carbon dioxide content of the blood in severe asphyxia neonatorum is slightly lowered as a result of the displacement of this gas from base by the large amounts of lactic acid present. The serum p_H of asphyxiated infants is reduced to the lower limits compatible with life, and in fatal cases may even fall below 7.00. The evidence indicates that the use of carbon dioxide as a resuscitating agent in asphyxia neonatorum is not only superfluous but may even be harmful in that it tends to aggravate an already existing acidosis. It is further suggested that other attempts at stimulation, such as slapping and tubbing, may also be deleterious. The author concludes that the chief therapeutic indication in asphyxia neonatorum is for oxygen (or air); the particular method by which the oxygen is administered seems of minor importance, so long as the air passages are clear and the pulmonary alveoli are supplied with adequate amounts of this gas.

Journal of Allergy, St. Louis

3: 113-218 (Jan.) 1932

*Perennial Treatment of Seasonal Hay Fever. A. Brown, New York. —p. 113.
Identity of Allergically Active Substance in Giant and Low Ragweed Pollen. A. Stull, R. A. Cooke and R. Chobot, New York.—p. 120.
Emanations of Flies as Exciting Causes of Allergic Coryza and Asthma: III. Hypersensitiveness to Moths and Butterflies (Lepidoptera). S. J. Parlato, Buffalo.—p. 125.
*Mechanism of Asthmatic Attack in Chronic Allergic Asthma. B. Steinberg, Toledo, Ohio.—p. 139.
*Congenital Protein Hypersensitiveness: Protein Hypersensitiveness Transmitted from Allergic Mother to Child. B. Ratner and Janet E. Greenburgh, New York.—p. 149.
Histamine: Reactive Substance in Human Dander. J. A. Murphy and H. M. Cobe, Philadelphia.—p. 161.
Study of Apparent Atopic Similarity of Certain Chenopodiales Pollens. E. D. Sellers and W. B. Adamson, Abilene, Texas.—p. 166.
Incidence and Rôle of Paranasal Sinus Disease in Hay Fever. R. A. Kern and J. C. Donnelly, Philadelphia.—p. 172.
Maximum Dosage in Pollen Therapy. G. T. Brown, Washington, D. C. —p. 180.
Urticaria Solaris. E. Weiss, Philadelphia.—p. 192.

Perennial Treatment of Seasonal Hay Fever.—Brown presents a modification of the specific treatment of pollen hay fever, consisting of a distribution of the injections at intervals of from three to four weeks throughout the year, instead of the usual preseasonal injections at intervals of five to seven days. One may institute the treatment at any period of the year, merely increasing dosage to maximum and then increasing the interval as tolerance permits. The actual number of visits to the office or clinic can be lessened from the usual twenty or more to twelve. There is little likelihood of an interruption of the treatment by illness or absence for other causes. It distributes the load of the physician's work in the clinic and in private practice throughout the year.

Asthmatic Attack in Chronic Allergic Asthma.—The bronchi were injected with iodized oil, and roentgenograms were made by Steinberg during the course of an asthmatic attack and during an interval between attacks. Postmortem material of patients dying from allergic asthma was correlated with the roentgenologic observations. On the basis of his study the author concludes that an asthmatic paroxysm is essentially due to bronchial occlusion by mucus as a result of a hypersecretory activity of the bronchial mucous glands. The degree and the duration of an attack are proportionate to the extent of mucous secretion and bronchial plugging. There is a reduction of functioning lung tissue due to a permanent bronchial occlusion. The extent of this reduction is proportionate to the duration of the disease and the severity and frequency of the individual attacks.

Congenital Protein Hypersensitiveness.—According to Ratner and Greenburgh, identical protein hypersensitiveness may exist in the human mother and her child. This hypersensitiveness is transferred by way of the placenta. The allergic antibodies responsible for this sensitization of the fetus in utero are shown to have the qualities of the Prausnitz-Küstner antibodies and are demonstrated in both the mother and her child. These antibodies further are shown to be identical with the anaphylactic antibodies, for anaphylactic shock and sensitization of the uterus were produced in guinea-pigs sensitized by human antibodies. Congenital protein hypersensitiveness is divided into two phases, active and passive, the existence of which places this type of sensitization on a basis as clearly defined as sensitization acquired through other portals, such as inhalation, ingestion or injection. Since sensitization of a human being can be acquired in utero before birth, it follows that allergy is not always dependent on chromosomal inheritance.

Journal of Biological Chemistry, Baltimore

94: 613-842 (Jan.) 1932. Partial Index

Chemistry of Lipoids of Tubercle Bacilli: XXVI. Separation of Lipoid Fractions from Leprosy Bacillus. N. Uyei and R. J. Anderson, New Haven, Conn.—p. 653.
Tryptophan Metabolism: II. Growth-Promoting Ability of dl-Tryptophan. C. P. Berg and Martha Potgieter, Iowa City.—p. 661.
*Blood and Urine Studies Following Bromide Injection. A. B. Hastings, H. N. Harkins and S. K. Liu, Chicago.—p. 681.
Acidic Property of Sugars. F. Urban and P. A. Shaffer, St. Louis. —p. 697.
Colorimetric Method for Determination of Allantoin. H. W. Larson, New York.—p. 727.
Metabolism of Sulphur: XVIII. Distribution of Urinary Sulphur in Rabbit After Administration of Monobromobenzene. S. A. Lough and H. B. Lewis, Ann Arbor, Mich.—p. 739.
*Irradiated Milk: Energy Requirements for Antirachitic Activation. G. C. Supplee, A. F. Hess, New York, and M. J. Dorcas, Cleveland. —p. 749.
Antineuritic Vitamin: I. Method of Assay, Concentration of Vitamin with Silver Under Various Conditions and Its Solubility in Certain Organic Solvents. R. J. Block, G. R. Cowgill and B. H. Klotz, New Haven, Conn.—p. 765.
Is Blood Protein Amide Nitrogen a Source of Urinary Ammonia? T. P. Nash, Jr., and E. F. Williams, Jr., Memphis, Tenn.—p. 783.

Studies of Blood and Urine Following Bromide Injections.—Hastings and his associates report experiments in which they demonstrated that red blood cells seem to have a stronger attraction for bromide ions than for chloride ions. The distribution ratios of bromide concentration between cells and serum are a uniform percentage greater than the chloride ratios. The presence of bromide lowers the chloride ratios even more. The kidneys seem to have a greater ability to excrete chloride than bromide. The excretion of chloride following a sodium chloride injection is practically equal to that following a similar injection of sodium bromide. The excretion of chloride and bromide is not altogether proportional to the concentration of these ions in the serum. After the injection of either sodium chloride or sodium bromide, the p_H remains rather constant but there are marked changes in the blood-water balance. The cells give up water, the water content of serum increases, the refractive index decreases, and the hematocrit reading falls. Most of these factors return toward normal and the hematocrit reading goes far above normal in

the last few samples. Total carbon dioxide determinations were made only in the chloride injection experiments and showed a moderate drop in the value obtained after injection. The injection of either salt produces a moderate hyperpnea.

Antirachitic Activation of Milk.—Supplee and his associates present physical data indicating the character and the amount of radiant energy required for the antirachitic activation of milk and coordinate them with the biologic and clinical tests. The irradiation of the milk was carried out in thousand pound lots under commercial conditions which permitted a precise study of various factors. With a suitable quality and quantity of radiant energy applied under uniform conditions, the antirachitic and calcifying properties of milk can be regularly increased within a few seconds, as determined by biologic laboratory assays and clinical tests on infants. This high degree of activation is obtained without the development of adverse secondary reactions, which may occur after longer periods of exposure. The energy of the radiations from a suitable carbon lamp of the flaming arc type and a quartz mercury vapor lamp confers definite antirachitic and calcifying potency on milk treated according to a technic described by the authors. However, the spectral energy characteristics of the radiations from the carbon arcs are readily subject to control, as to both the quality and the quantity of the energy. Milk irradiated under controlled conditions described by the authors and subsequently dried by the Just process was found to protect even Negro infants from rickets during the winter months. Such milk manifested definite curative value in a number of cases, as shown by the marked healing in roentgenograms.

Journal of General Physiology, Baltimore

15: 257-361 (Jan. 20) 1932

Chemical Explanation of Variability of Growth Rate. O. Rhan, Ithaca, N. Y.—p. 257.
Electrokinetic Phenomena: V. Small But Constant Source of Error in Measurements of Viscosity. H. A. Abramson, New York.—p. 279.
Variation of Electric Resistance of Plant Tissues for Alternating Currents of Different Frequencies During Death. B. J. Luyet, New York.—p. 283.
Physical Nature of "Cytotropism" and Allied Phenomena and Their Bearing on Physics of Organic Form. N. Rashevsky, East Pittsburgh. —p. 289.
Sensibility of the Sunfish, Lepomis, to Monochromatic Radiation of Low Intensities. H. Grundfest, New York.—p. 307.
Rôle of Intracellular Bacteriophage in Lysis of Susceptible Staphylococci. J. H. Northrop and A. P. Krueger, Princeton, N. J.—p. 329.
Effect of Added Loads on Geotropic Orientation of Young Guinea-Pigs. M. Upton, Boston.—p. 333.
Effect of Denaturation of Viscosity of Protein Systems. M. L. Anson and A. E. Mirsky, New York.—p. 341.
Killing of Colon Bacilli by Ultraviolet Light. R. W. G. Wyckoff, New York.—p. 351.

Journal of Industrial Hygiene, Boston

14: 1-40 (Jan.) 1932

Hydrocyanic Acid Gas Poisoning by Absorption Through Skin. P. Drinker, Boston.—p. 1.
*Normal Sensitivity of Cardio-Inhibitory Center. W. R. Miles, San Francisco.—p. 3.
Studies on Experimental Pneumonoconiosis: VIII. Inhalation of Quartz Dust. L. U. Gardner, Saranac Lake, N. Y.—p. 18.

Normal Sensitivity of Cardio-Inhibitory Center.—Miles recorded continuous electrocardiograms taken with capacity in series for young men while reclining in a steamer chair, while chinning a bar directly above the chair, and during relaxation following this exertion. The transitions from quiet to work, and then to recuperation, were very prompt. The man, in chinning the bar, lifted the body weight a vertical distance of 2 feet, held it up for seven seconds, and then promptly relaxed in the chair. There was a slight general increase (3 per cent) in heart rate in anticipation of the exertion, but the exertion itself produced in the first four seconds an added increase of 25 per cent, and in the next four seconds 5 per cent. The heart rate remained at the exertion level during the first four seconds of recuperation. Then the rate lengthened so promptly as to reach the preliminary level in from twelve to sixteen seconds after the work had been finished. The group of young men showed less variability in heart rate during exertion than under conditions of quiet or recuperation. The author suggests two types of cardio-inhibitory adjustment: regular and oscillatory; each of these may be further divided into prompt, average speed, and slow.

Journal of Lab. and Clinical Medicine, St. Louis

17: 297-398 (Jan.) 1932

Biometric Studies of Head Lengths of Human Spermatozoa. G. L. Moench and Helen Holt, New York.—p. 297.
*Effects on Pneumococci of Sodium Dehydrocholate, Bile Salt Derivative III. E. E. Ziegler, Washington, D. C.—p. 317.
*Detoxification of Cocaine, Picrotoxin and Strychnine by Sodium Amytal. E. E. Swanson, Indianapolis.—p. 325.
Presence and Significance of Isohemagglutinins in Body Outside Blood Stream. L. W. Parr, Beirut, Republique Libanaise.—p. 333.
Significance of Periodic Health Examination and Its Influence on Health of Group of Examinees: Summarizing Five Hundred Consecutive Periodic Health Examinations in Private Practice. F. A. Faught, Philadelphia.—p. 337.
Isolation of Organism of Abortus-Melitensis Group from Blood Clot, Serum of Which Failed to Give Agglutination with Bacillus Abortus. Ruth Gilbert and H. Gladys Dacey, New York.—p. 345.
Normal Relationships of Blood and Urine Phosphorus. B. S. Walker, Boston.—p. 347.

Effects on Pneumococci of Sodium Dehydrocholate.—Ziegler reports that pneumococci of type I, grown on artificial mediums, were not dissolved by sodium dehydrocholate but were killed or rendered avirulent so that they would not grow on artificial mediums or produce infection. Sodium dehydrocholate has an antipneumococcus action in the animal body. A mixture of sodium dehydrocholate and of pneumococci, when injected into rabbits, produces a degree of immunity to pneumococcus infection. Sodium dehydrocholate does not produce local tissue injury as does sodium taurocholate and glycocholate.

Detoxification of Cocaine, Picrotoxin and Strychnine by Sodium Amytal.—According to Swanson, protection is afforded by sodium amytal against intoxication of cocaine, picrotoxin and strychnine. The intravenous and oral administration of sodium amytal in the order named offers the more effective protection for all three poisons. Sodium amytal is an anticonvulsant as well as a detoxifying agent for the three poisons.

Laryngoscope, St. Louis

42: 1-80 (Jan.) 1932

*Meningitis of Otitic Origin. J. G. Dwyer, New York.—p. 1.
Septic Meningitis of Rhinolaryngologic Origin. L. M. Hurd, New York. —p. 8.
*Newer Methods for Prophylaxis and Treatment of Meningitis, with Especial Reference to Streptococcus and Pneumococcus Meningitis. J. A. Kolmer, Philadelphia.—p. 12.
Chronic Otorrhea and Its Treatment, with Especial Reference to Use of "Iodine Dusting Powder" and "Zinc Ionization." A. P. T. Tsoong, Shanghai, China.—p. 34.
Tooth Discharged from Nose: Case Report. D. MacFarlan, Philadelphia. —p. 48.
*Tonsillectomy Under General Anesthesia in Modified Rose Position. E. F. Ziegelman, San Francisco.—p. 49.
Living Foreign Bodies in Larynx. F. Robbins, New York.—p. 58.
Control of Pain Following Tonsillectomy. A. F. Laszlo, New York. —p. 66.

Meningitis of Otitic Origin.—According to Dwyer, the fact that in otitic meningitis so many kinds of treatment have been suggested and that the problem has been approached from so many points of view, and especially that the death rate is so high, simply indicates that the treatment is still *sub judice*. Practically every method of treatment has been used. The problem has been approached from two main avenues. One is based on surgery and drainage, such as repeated lumbar punctures, drainage of the cisterna, and so on. The second has been the injection of antiserums and drugs into the spinal fluid. The third has been a combination of the two. The author has tried all three, and no real progress can be reported in any series of cases. Eight of the patients in his series got well under different methods. The same methods failed in the vast majority of cases. With the brilliant results obtained in the treatment of the epidemic form with a specific antiserum, it seems to the author that the greatest hope will be the development of antiserums.

Prophylaxis and Treatment of Meningitis.—Kolmer summarizes the results of his clinical and laboratory investigations on the prophylaxis and treatment of septic meningitis in the form of clinical recommendations as follows: 1. Vaccination: In selected cases of chronic sinusitis and otitis and especially ethmoiditis, when extensive operative procedures are required, with the possibility of secondary meningitis, it is recommended that careful bacteriologic examination be made

with the preparation of autogenous vaccines containing approximately one billion micro-organisms per cubic centimeter. When time permits, at least six to eight doses should be given at intervals of four to seven days. For adults the first dose may be 0.2 cc. by subcutaneous injection and subsequent doses gradually increased until 1 cc. is being given. Intracutaneous injections of 0.2 cc. per dose (not increased) may result in better immunization. Operation may be done about one week after the last dose. 2. Serum prophylaxis: If pneumococci are found it is advisable to determine the type, which requires an additional eighteen to twenty-four hours, because this information is of value from the standpoint of dosage of serum and prognosis. In infections of adults with type I pneumococcus, 10 cc. of Felton's concentrated antipneumococcus serum may be injected intramuscularly just before or immediately after operation; a second dose may be given the following day, and a third dose four days later. In infections with pneumococcus type II and group IV, the same dosage, or 15 cc., should be used; in infections with type III pneumococcus, a dosage of 20 cc. should be employed. The same doses may be given to children over 10 years of age; half doses to younger children. In infections with the streptococcus, a therapeutic syringeful of concentrated polyvalent antistreptococcus serum may be given just before or immediately after operation, repeated the following day and again four days later (in unusually severe infections), or an intramuscular injection may be given for the first dose, followed by one or two doses at the same intervals. Children under 10 years may receive about one half of these amounts. 3. Treatment of early meningitis: On the development of signs and symptoms of meningitis, spinal puncture may be conducted for the slow removal of about 3 to 5 cc. of fluid. If examination discloses the presence of a localized "meningismus" or meningitis there should be a complete exenteration of the cells in cases of acute mastoiditis and radical operation in cases of chronic suppurative otitis media. If the portal of infection has been the labyrinth, thorough drainage should be established through the labyrinth and in all cases it is advisable to incise the dura at the site of operation. In sinus cases, careful thought should be given to reoperation for the purpose of affording the best possible drainage. The intake of fluids may be increased and spinal drainage conducted every six to eight hours. Intracarotid and subthecal medication may be omitted. 4. Treatment of diffuse meningitis: If the foregoing measures fail to check the infection or if the clinical and spinal fluid examinations disclose a spreading type of meningitis, more radical measures should be decided on without delay because there appears to be little or no hope of success in the treatment of advanced cases.

Position in Tonsillectomy.—Ziegelman states that aspiration is apparently one of the causes of abscess of the lung following tonsillectomy. The position of the patient during operation is probably a factor in the formation of aspiration. The so-called modified Rose position from the standpoint of mechanics overcomes the tendency to aspiration. This position is ideal for orientation of the operative field. It is the logical position for the control of hemorrhage in the prevalent and always difficult area (the lingual area) and it is the position of choice for the prevention of surgical shock.

Michigan State M. Soc. Journal, Grand Rapids

31: 1-86 (Jan.) 1932

*Surgical Lesions of Large Bowel. F. W. Rankin, Rochester, Minn.—p. 1.
Welfare Movements and Michigan State Medical Society. B. R. Corbus, Grand Rapids.—p. 10.
Plastic Surgery: Its Psychologic Aspects. Claire L. Straith, Detroit.—p. 13.
*Conservative Operative Treatment of Hydronephrosis. J. K. Ormond, Detroit.—p. 18.
Tuberculosis and Reproduction. F. L. Adair and F. E. Whitaere, Chicago.—p. 23.
Some Early Printed Documents of Medical Department of University of Michigan. G. H. Jackson, Jr., Chicago.—p. 28.
Use of Synephrin Emulsion. E. K. Carmichael, Detroit.—p. 33.
Schizophrenia. I. L. Polozker, Detroit.—p. 34.
John Collins Warren. R. A. Meyers, Ann Arbor.—p. 39.
Michigan's Department of Health. C. C. Slemons, Lansing.—p. 46.

Surgical Lesions of Large Bowel.—According to Rankin, consideration of surgical diseases of the large bowel revolves around malignant tumors, for more than two thirds of all lesions requiring extirpation are carcinomatous. A review of colonic and rectal surgery at the Mayo Clinic for a year reveals the fact that 68 per cent of the total number of operations on the colon or rectum that were required for major lesions were for carcinoma. In addition, however, such lesions as tuberculosis, diverticulitis, polyposis, Hirschsprung's disease, fecal fistula, and an occasional bizarre condition, such as intussusception or another benign lesion, required attention. The author calls attention particularly to three problems directly associated with malignant disease of the colon: (1) the relationship of polypi to the development of carcinoma, (2) improved diagnostic methods, and (3) the choice of operation and its mortality.

Treatment of Hydronephrosis.—Ormond believes that, in selected cases of hydronephrosis, plastic operations on the ureteropelvic junction are indicated. A pyelogram of the supposedly uninvolved kidney should be a part of the diagnostic procedure in every case of hydronephrosis. The factors to be considered in deciding between a plastic operation and nephrectomy are (1) the condition of the opposite kidney, (2) the functioning power of the affected kidney and the cause of the hydronephrosis, (3) the age of the patient, and (4) his financial status. Following a plastic operation, all patients should have the benefit of ureteral dilation and pelvic lavage.

Military Surgeon, Washington, D. C.

70: 1-108 (Jan.) 1932

Hypertension and the Army Officer. F. M. Hartsock.—p. 36.
Medical Service in Nicaragua. S. A. Cameron.—p. 38.
Operations for Peptic Ulcer and Gastric Cancer, with Discussions. H. W. Jones.—p. 57.
Third Medical Reserve Officers' Inactive Training Unit at Mayo Foundation, Rochester, Minn. R. J. Bennett.—p. 67.

Nebraska State Medical Journal, Lincoln

17: 1-44 (Jan.) 1932

Some Practical Points in Allergy. O. A. Reinhard, Lincoln.—p. 1.
Uncle Sam Practices Medicine. A. L. Miller, Kimball.—p. 7.
Recent Advances in Endocrinology. J. F. Gardiner, Omaha.—p. 11.
Selection of Operation for Peptic Ulcer. R. R. Best, Omaha.—p. 15.
Importance of Primary Treatment in Fractures. H. W. Orr, Lincoln. p. 18.
"Avertin" Anesthesia: Analysis of Fifty Consecutive Cases of Basal Anesthesia Induced by "Avertin" Fluid: (Tribrom-Ethyl-Alcohol in Amylene Hydrate). R. H. Whitham and I. C. Munger, Jr., Lincoln. —p. 20.
Treatment of Pneumonia. J. B. Pankau, Dalton.—p. 23.
Suture of Musculospiral Nerve: Case. C. G. McMahon, Superior.—p. 28.
Sudden Death Following Cisternal Puncture: Two Instances. C. Russum and M. W. Barry, Omaha.—p. 30.
Character of Labor: Its Influence on Puerperal Infection. D. H. Bessesen, Minneapolis.—p. 32.

New England Journal of Medicine, Boston

206: 47-102 (Jan. 14) 1932

Operative Procedures in Common and Hepatic Duct Injuries. H. M. Clute, Boston.—p. 47.
Endometriosis: Report of Two Cases. H. G. Stetson and J. E. Moran, Greenfield, Mass.—p. 52.
*Paraplegia Associated with Nontuberculous Kyphoscoliosis: Report of Case and Survey of Literature. H. R. Viets and M. H. Clifford, Boston.—p. 55.
*Intravenous Pyelography During Pregnancy. G. C. Prather, E. G. Crabtree and S. A. Robins, Boston.—p. 62.
Development of Rest Treatment in Pulmonary Tuberculosis. J. H. Pratt, Boston.—p. 64.
The Art and Human Nature. S. R. Roberts, Atlanta, Ga.—p. 70.
Progress in Obstetrics. J. Rock, Boston.—p. 77.

Paraplegia and Nontuberculous Kyphoscoliosis.—According to Viets and Clifford, pressure paraplegia may occur as the direct result of angulation of the spinal cord secondary to severe kyphoscoliosis. The paraplegia usually appears after many years of scoliosis, without predisposing trauma. The paralysis, spastic in type, is associated with sensory changes below the point of compression, sphincter weakness and, rarely, pain. Block in the pathway of the spinal fluid may be demonstrated by pressure studies and by the injection of iodized poppy-seed oil 40 per cent. Some patients are relieved or even cured by hyperextension of the spine, but most patients require surgical decompression of the impinged spinal cord at the point of maximum angulation of the spine. The prognosis, with appropriate treatment, is often good and sometimes excellent.

Intravenous Pyelography During Pregnancy.—Prather and his associates have found that intravenous pyelography is useful during pregnancy in which a kidney diagnosis is desira-

ble but in which cystoscopic examination is not indicated. Satisfactory films can be obtained in at least 91 per cent. The majority of best plates are obtained from five to fifteen minutes after the injection has been completed. The authors did not observe any obstetric complications that could be related to the examination. With the roentgenographic technic described by them, there seems to be no danger to the fetus either from the solution injected or from the roentgen rays.

New Orleans Medical and Surgical Journal

84: 513-582 (Jan.) 1932

Example of What Surgery Can Do in Saving Certain Group of Cases of Pulmonary Tuberculosis as Illustrated by a Case Report. J. A. Danna, New Orleans.—p. 513.
Ruptured Appendix and Its Management. J. C. Willis, Shreveport, La.—p. 518.
Verumontanitis: Its Relation to Impotence. L. B. Moseley, Jackson, Miss.—p. 523.
Practice of Neuropsychiatry in General Hospitals. I. Kimbell, Alexandria, La.—p. 525.
Am I My Brother's Keeper? G. J. Smith, Jackson, La.—p. 531.
Gastro-Intestinal Disturbances in Infants Caused from Middle Ear and Mastoid Diseases. R. E. Anderson, Jackson, Miss.—p. 534.
Gastro-Intestinal Manifestations in Allergy. B. G. Efron, New Orleans.—p. 540.
Importance of Prenatal Care. J. P. Evans, Gulfport, Miss.—p. 545.
Bronchography. V. M. Maxwell, Sanatorium, Miss.—p. 547.
Diagnosis and Treatment of Cancer of Skin. M. D. Ratcliff, McComb, Miss.—p. 550.

New York State Journal of Medicine, New York

32: 61-124 (Jan. 15) 1932

*Brief Review of Physiology of Gallbladder. L. Levyn, Buffalo.—p. 61.
Acute Poliomyelitis: Names and Synonyms: Infantile Paralysis: Heine-Medin Disease. I. Pardee, New York.—p. 63.
Provision for Treatment of the Syphilitic and Gonorrheic. A. Pfeiffer, Albany.—p. 68.
Leprosy in Child. I. N. Kugelmass, New York.—p. 68.
Results of Recent Hygiene Examination. P. B. Brooks, Albany.—p. 70.
*Microscopic Slide Precipitation Test for Syphilis with Spinal Fluid: Comparative Study with Five Hundred Spinal Fluids. J. J. Eller and C. R. Rein, New York.—p. 71.
Cisternal Puncture. M. A. Lyons, New York.—p. 78.
Recorded and Resident Death Rates in New York State. J. V. de Porte, Albany.—p. 82.

Physiology of Gallbladder.—According to Levyn, the three significant functions of the gallbladder are the evacuation of its contents brought about by contraction of its musculature, concentration of its contents through the absorption of water, and the secretion of mucus. Some workers have shown that dyes placed in the lumen of the gallbladder find their way into the lymphatics and that there is a probability that cholesterol is also absorbed from the bile. It is uncertain, however, whether this is a normal function or this phenomenon indicates very early gallbladder disease. The earliest pathologic changes in the gallbladder undoubtedly are directly related to disturbance of function, and cholecystography is of inestimable value as a functional test. If stasis of the bile occurs with no undue increase of cholesterol, active concentration may induce precipitation of other constituents of the bile with the formation of other types of stones.

Precipitation Test for Syphilis.—Eller and Rein describe experiments in which they noted that the microscopic slide precipitation test with spinal fluids was more sensitive than the Wassermann reaction, modified Kahn test, colloidal gold reaction and albumin-globulin ratios. This test gave results which agreed more frequently with the clinical condition of the patients than those of the other spinal fluid tests used in this series. The test is simple in detail and the results magnified by the microscope are read accurately with ease.

Northwest Medicine, Seattle

31: 1-48 (Jan.) 1932

Treatment of Pernicious Anemia. C. C. Sturgis and R. Isaacs, Ann Arbor, Mich.—p. 1.
Agranulocytic Syndromes. E. E. Osgood, Portland, Ore.—p. 5.
Undulant Fever. G. W. Millett, Portland, Ore.—p. 9.
Id.: Its Treatment by Whole Blood Transfusion. C. Quevli, Jr., and M. T. Nelsen, Tacoma, Wash.—p. 12.
Deaths Attributed to Diabetes in Oregon: Study of One Hundred and Sixty-Eight Cases with Especial Reference to Insulin. B. Holcomb, Portland, Ore.—p. 14.
Prolonged Incubation Period of Primary Sore: Review of Literature and Report of a Case. C. D. Donahue, Eugene, Ore.—p. 18.
Diet and Its Relation to Pathology. E. J. Jasper, Astoria, Ore.—p. 19.
Psychogenic Obstipation Simulating Acute Intestinal Obstruction. D. Metheny and R. N. Dillon, Seattle.—p. 20.

Pennsylvania Medical Journal, Harrisburg

35: 223-278 (Jan.) 1932

Modern Methods of Diagnosis in Kidney Infections. W. H. Kinney, Philadelphia.—p. 223.
Slit Lamp Study of Two Hundred Cases of Young Adult Lenses. L. F. McAndrews, Philadelphia.—p. 227.
Nervous and Mental Component in Cutaneous Disease. J. H. Stokes, Philadelphia.—p. 229.
Consideration of Some Phases of Nutrition in Early Life. A. G. Mitchell, Cincinnati.—p. 233.
*Pulmonary Disease as Result of Nasal Accessory Sinus Infection. W. F. Manges, Philadelphia.—p. 240.
Gas Anesthesia. W. T. Killian, Philadelphia.—p. 242.
Statistical and Other Observations on Spinal Anesthesia. W. W. Dill, Norristown.—p. 244.
Present Day Anesthesia. E. W. Beach, Philadelphia.—p. 246.

Pulmonary Disease as Result of Infection of Nasal Accessory Sinus.—Manges states that cold in the head, followed by laryngitis, bronchitis, asthma, or maybe bronchopneumonia, either is infectious, in the first place, or soon becomes so. The course of this process is not well defined; its progress is not associated with severe reactions or excessive prostration unless bronchopneumonia develops, so that the condition is not taken seriously until asthma incapacitates the patient or cough becomes so severe as to demand attention. Asthma becomes a custom with the patient, and cough develops into chronic bronchitis, the forerunner of bronchiectasis. The underlying cause or source of infection in many cases lies most commonly in the maxillary antrums and ethmoids, but any or all of the accessory sinuses may be at fault.

Southern Medical Journal, Birmingham, Ala.

25: 1-112 (Jan.) 1932

Public Health in Prevention of State Medicine. F. J. Underwood, Jackson, Miss.—p. 1.
Mimicry of Clinical Picture of Certain Extra-Abdominal Conditions by Others of Intra-Abdominal Origin. J. M. T. Finney, Baltimore.—p. 6.
An Original Method of Estimating Thyrotoxic State. W. Bartlett and W. Bartlett, Jr., St. Louis.—p. 12.
Leukorrhea: Its Significance and Treatment. P. B. Bland, Philadelphia.—p. 17.
Prevention of Puerperal Infection. J. W. Harris, Madison, Wis.—p. 23.
Operations on Sympathetic Nervous System for Arterial Disease of Lower Extremities: Experimental and Clinical Observations. A. O. Singleton, Galveston, Texas.—p. 26.
*Unstable Colon. J. L. Kantor, New York.—p. 29.
Infections of Prostate Gland. W. A. Reed, New Orleans.—p. 37.
Consideration of Some Phases of Nutrition in Early Life. A. G. Mitchell, Cincinnati.—p. 39.
Pediatrician's Relation to Psychiatry and to Education. B. Crothers, Boston.—p. 47.
Juvenile Delinquency and Child Guidance Clinic. C. S. Holbrook, New Orleans.—p. 50.
Curriculum. R. H. Oppenheimer, Emory University, Ga.—p. 53.
Rôle of Roentgenologist in Health Audit. R. T. Wilson, Temple, Texas.—p. 55.
Survey of Otolaryngology. F. D. Woodward, University, Va.—p. 57.
Problems Affecting Modern Private Clinical Laboratory. F. M. Johns, New Orleans.—p. 59.
Relationship of Health Officer to Organized Medicine. J. N. Baker, Montgomery, Ala.—p. 61.
Development of Dermatology to Its Present Status: Consideration of Its Contribution to Internal Medicine. C. B. Willmott, Louisville, Ky.—p. 63.
Present and Future Outlook of Pediatrics. D. L. Smith, Spartanburg, S. C.—p. 65.
Our Changing Conception of Eczema. B. Shelmire, Dallas, Texas.—p. 67.
Effects of Unrelieved Prostatic Obstruction. W. C. Stirling, Washington, D. C.—p. 73.

Unstable Colon.—According to Kantor, the unstable colon is one of the most common and disabling diseases encountered in practice. A certain amount of variability of colonic function is normal. Among the important causes of colonic instability are disorders of the nervous system, inappropriate diet, and vicious bowel habits. Nervous causes of colonic instability probably include disturbances of the psychic sphere as well as imbalance of the autonomic system. The chief dietary factors in colonic instability are rough foods, cold foods, and foods causing allergic manifestations. The chief causes of vicious bowel habits are popular misinformation, the ease of self-medication, and the relative unattractiveness of securing and following a conservative plan of treatment. The chief manifestations of colonic instability are constipation, diarrhea, "belly consciousness" and pain. Pain due to colonic instability is often mistaken for evidence of organic abdominal disease. Appendectomy has been frequently performed in cases of

unstable colon. The diagnosis of colonic instability is readily made by roentgen examination. Especially useful is the nine-hour observation. Reassurance, relaxation and reeducation are the keynotes of successful restoration of normal bowel function.

Southwestern Medicine, Phoenix, Ariz.

15: 545-594 (Dec.) 1931

Aeronautics and Medicine. W. R. Jamieson, El Paso, Texas.—p. 545.
Roentgen Examination of Gastro-Intestinal Tract. M. J. Geyman, Santa Barbara, Calif.—p. 548.
Surgical Treatment of Peptic Ulcer. V. C. Hunt, Los Angeles.—p. 553.
Resistance and Immunity to Animal Infections. F. W. Allen, Jr., Albuquerque, N. M.—p. 557.
Treatment of Delirium Tremens. N. H. Brush, Santa Barbara, Calif.—p. 560.
Electrocautery in Tuberculosis of Larynx. W. E. Vandevere, El Paso, Texas.—p. 564.
Use of Insulin in Treatment of Anorexia and Malnutrition. D. G. Arnold, El Paso, Texas.—p. 568.
Industrial Hygienic Problems of Copper Mining Industry. F. V. Meriwether, Picher, Okla.—p. 571.
Treatment of Pneumonia with Quinine: Case. O. H. Brown, Phoenix, Ariz.—p. 577.
Cerebrospinal Meningococcic Meningitis: Specific Treatment. H. P. Mills, Phoenix, Ariz.—p. 579.

Texas State Journal of Medicine, Fort Worth

27: 629-696 (Jan.) 1932

Present Status of Ketogenic Diet and Its Use. C. J. Barborka, Rochester, Minn.—p. 637.
The Internist and the Clinical Laboratory. J. E. Johnson, Mineral Wells.—p. 641.
Improper Use of Milk. F. S. Martin, Beaumont.—p. 645.
Emotional and Psychic Factors in Treatment of Tuberculosis. S. E. Thompson, Kerrville.—p. 648.
Present Status of Vaccine Therapy. M. D. Bell, Dallas.—p. 649.
Bone Tumors from Roentgenologist's Aspect. W. J. Marquis and W. G. McDeed, Houston.—p. 652.
Atrophy of Suprarenal Glands in Addison's Disease. G. T. Caldwell, Dallas.—p. 654.
New Supravaginal Hysterectomy Based on Restoration of Physiologic Bladder Function and Normal Anatomic Pelvic Relationships. T. R. Sealy, Santa Anna.—p. 659.
Treatment of Chronic Brain Injuries. C. C. Nash, Dallas.—p. 662.
Primary Sarcoma of Stomach with Clinicopathologic Report of Case. G. E. Brereton, Dallas.—p. 666.
Prevention of Intracranial Birth Injuries. C. R. Hannah, Dallas.—p. 671.
Postpartum Care. F. J. Iiams, Houston.—p. 673.

United States Naval Med. Bulletin, Washington, D. C.

30: 1-150 (Jan.) 1932

Relief Work in Managua Earthquake. G. D. Hale and H. R. Boone.—p. 1.
*Mortality in Appendicitis. G. F. Cottle.—p. 9.
Significance of Leukopenias, with Especial Reference to Agranulocytosis. R. R. Kracke.—p. 16.
Aschheim-Zondek Pregnancy Test. O. Wildman.—p. 27.
Some Aspects of Personnel Division of Bureau of Medicine and Surgery. K. C. Melhorn.—p. 31.

Mortality in Appendicitis.—According to Cottle, acute appendicitis operated on before the stage of abscess and generalized peritonitis are practically devoid of mortality. After forty-eight hours from onset the mortality rises. The author believes that every abdominal pain should be considered appendicitis until proved to be due to another pathologic condition. A rising pulse generally means peritonitis in cases that begin with abdominal pain. The decision for or against operation should be made after a brief (two or three hour) period of intensive study of the case. Operation should be offered as soon as the diagnosis is made and usually when acute appendicitis cannot be conclusively ruled out. The Ochsner treatment should not be used in appendicitis. It is advocated only for cases of generalized peritonitis—pulse over 130 and a silent distended abdomen. The pelvic appendix with its atypical onset and course must be remembered, bladder and rectal symptoms associated with abdominal pain given careful consideration, and the rectal examination not forgotten.

Virginia Medical Monthly, Richmond

58: 641-706 (Jan.) 1932

Mental Hygiene Movement. R. P. Truitt, Baltimore.—p. 641.
Mental Hygiene Survey of the State of Virginia. D. C. Wilson, University.—p. 648.
Present Activities for Prevention of Mental Disorders in Virginia. W. F. Drewry, Richmond.—p. 653.
Suggested Program of Mental Hygiene for Virginia. Beverley R. Tucker, Richmond.—p. 656.
Outline of Practical Child Guidance Clinic. H. D. Coghill, Richmond.—p. 660.
The Family Physician's Duty to the Squinting Child. F. P. Smart, Norfolk.—p. 663.
*Significance of Schilling Differential Blood Count in Acute Infections of Childhood. W. A. McGee, Richmond.—p. 665.
Acromegaly Succeeded by Hypopituitarism: Case. E. L. Corey and J. B. Graham, Richmond.—p. 669.
Trichomonas Vaginalis Vaginitis. C. J. Andrews, Norfolk.—p. 671.
Diagnosis and Treatment of the More Common Disorders of Anus, Rectum and Sigmoid. B. F. Dean, Jr., Washington, D. C.—p. 674.
Tuberculosis Outpatient Service of the State. R. K. Flannagan, Richmond.—p. 676.
Rambling Thoughts About Whisky and Drug Addiction. W. C. Ashworth, Greensboro, N. C.—p. 678.
Some Less Common Diseases of Upper Respiratory Tract. F. W. Shaw, Richmond.—p. 680.
How Far Will a Malingerer Go? Case. E. P. Tompkins, Lexington.—p. 682.
Analysis of Cesarean Sections Done at Columbia Hospital, Washington, D. C., 1920-1930. J. J. Mundell, Washington, D. C.—p. 683.

Significance of Schilling Differential Blood Count.—McGee emphasizes the fact that much can be learned relative to diagnosis, prognosis and treatment by use of the Schilling hemogram. The changes in the granulocytes often precede physical signs, symptoms, fever and total cell count changes. Repeated hemograms carefully done reduce the need of total white counts, which are often insignificant in comparison to the differential study. The hemogram is sort of a kaleidoscopic view of the infection in the blood. An outstanding blood picture should not be ignored because of the absence of clinical symptoms. The author believes that the Schilling hemogram should replace the Ehrlich differential count. The use of the Giemsa stain shows the granulocytes, lymphocytes and monocytes more clearly than Wright's stain, and should supplant the latter except in emergencies.

Yale Journal of Biology and Medicine, New Haven

4: 225-368 (Jan.) 1932

Historical Studies on Nature and Treatment of Gunshot Wounds from Fifteenth Century to Present Time. T. Billroth, Berlin, Germany.—p. 225.
*Rôle of Lactic Acid in Living Organism. H. E. Himwich, New Haven, Conn.—p. 259.
Relative Position of Colon and Stomach. C. Haight and B. Halpert, New Haven, Conn.—p. 293.
Health Centers. I. V. Hiscock, New Haven, Conn.—p. 295.
Problem of Depopulation in Melanesia. H. Hamlin, New Haven, Conn.—p. 301.
Blood Picture of Normal Laboratory Animals. R. A. Scarborough.—p. 323.

Rôle of Lactic Acid in Living Organism.—Himwich calls attention to the fact that the reactions attendant on the formation and removal of lactic acid are of utmost significance in the economy of the body. During rest and exercise they are involved in processes that deliver energy for the work of life. Though the splitting of phosphocreatine furnishes the energy for the contraction of muscle, exercise cannot continue long without the formation of lactic acid, for the energy thus made available is the direct cause of the resynthesis of adenosintriphosphate and therefore indirectly that of phosphocreatine. Liver as well as muscle is involved in the processes of recovery as lactic acid is reconverted to glycogen. The reversible reactions between glycogen, dextrose and lactic acid not only are important for skeletal muscle, but also are concerned in the work of cardiac and smooth muscle, the brain and perhaps in that of peripheral nerve conduction. At present there is no proved connection between lactic acid formation and glandular secretion. The exchanges of dextrose and lactic acid in the blood of liver, heart, brain and skeletal muscle are indicated in a diagram which shows that muscle is the chief source of the blood lactic acid while the liver is the chief source of dextrose. Heart and brain remove both dextrose and lactic acid from the blood. The action of the liver in removing lactic acid from the blood and supplying it with dextrose is an etiologic factor in the maintenance of the hyperglycemia of diabetes. When this mechanism is interfered with, as a result of severe injury to the liver, lactic acid may accumulate. Since oxidations are necessary for the resynthesis of glycogen, oxygen lack is always followed by an increased concentration of lactic acid in the body. Such a condition occurs most frequently in exercise. It is also found in patients, especially those with cardiorespiratory disease or anemia.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

6: 199-222 (Jan.) 1932

Heat in Treatment of Chronic Rheumatism. A. G. Watson and G. R. P. Aldred-Brown.—p. 201.
Treatment of Gout by Physical Methods. L. C. E. Calthrop.—p. 203.
Medical Review of Southern English Marine Resorts. M. B. Ray.—p. 205.
*Cardiac Fallacy in Acute Rheumatism. L. J. Llewellyn.—p. 208.
Rheumatism in London Busmen. S. J. G. Nairn.—p. 214.
Light in Relation to Rheumatism. A. B. Jones.—p. 215.

Cardiac Fallacy in Acute Rheumatism.—Llewellyn believes that the underlying morbid process in so-called acute rheumatism and chorea is one of endocrine autonomic imbalance involving especially the sympathetic divisions with their correlated endocrine glands, the thyroid and suprarenals (sympathetic) and parathyroids (parasympathetic). The morbid process or state of imbalance that determines what is termed acute "rheumatism" or "chorea" is a functional disorder. The same does not cause organic cardiac lesions in the majority of cases but only disturbances of cardiac rhythm which are mostly transitory in duration. The transitory cardiac arrhythmias, i. e., all states of dissociated rhythm, from "missed beats" to "incomplete heart block," are an integral part of the clinical syndromes termed acute rheumatism or chorea. They are the outcome of a transient phase of thyroidal or (as the author believes) of thyrosuprarenal toxicosis affecting the cardioregulatory or vasomotor system. This toxicosis—if prolonged, as in recurring attacks of so-called acute rheumatism or chorea or relapsing carditis—leads to endocarditis, myocarditis and terminal myocardial degeneration. But only in a minority do such organic cardiac lesions ensue. If the state of hyperthyroidism obtaining in so-called acute rheumatism or chorea evolves into or is preceded by exophthalmic goiter, it accentuates the tendency to organic cardiac lesions. The primary indication in therapy is to prevent, correct or control the initial tendency to endocrine-autonomic imbalance.

British Medical Journal, London

1: 1-26 (Jan. 2) 1932

Prognosis of Gastric and Duodenal Ulcer. Moynihan.—p. 1.
*Treatment of Dysmenorrhea by Exercise. Alice E. Sanderson Clow.—p. 4.
*Bone Graft and Fusion Operations for Spine. S. A. S. Malkin.—p. 5.
*Lichen Urticatus: Differential Diagnosis of Smallpox. H. D. Chalke.—p. 7.
*Thallium Acetate in Treatment of Ringworm of Scalp. J. T. Ingram.—p. 8.
*Low Visceral Tone. D. W. Carmalt-Jones.—p. 10.
Tuberculous Cervical Abscess. H. Bailey.—p. 11.
Cerebral Aneurysm with Recurrent Leakage. R. M. J. Harper.—p. 13.

Treatment of Dysmenorrhea by Exercise.—According to Clow, the patient's history generally serves as an explanation of the cause of her dysmenorrhea. It is usually found that the age of its onset, most commonly 16 to 19, corresponds with some change in the daily routine, involving more restricted time for exercise and increased hours of work, owing to study for an examination, or entry to an office, shop or factory. With the first indication of menstrual trouble the inclination is to reduce the exercise still further, and, if possible, to lie down during the time of malaise. The author therefore explains that, to prevent or cure the pain, the circulation of the blood must be stimulated by muscular exertion. If there is not time or opportunity for sufficient exercise in the open air, it should be supplemented by exercise done at home. The author has selected a few movements as being specially effective for dysmenorrhea and has had them printed on a single sheet, which she gives to the patient and tells her to do them for a quarter of an hour daily for a few days before onset of the period, and on no account to fail to do them on the first and second days of the period. They should be done with enough vigor to promote a sensation of heat or a gentle sweat. With few exceptions this practice prevents the onset of the disability, and if the pain has already begun it is usually dispelled, or at least relieved, as soon as the feeling of warmth is experienced. Some, however, especially patients over 30, have to repeat the exercises two or three times on the first day in order to keep themselves free from pain. After continuing the treatment for six to twelve months, many are able to leave it off altogether, provided they are not engaged in sedentary occupations.

Bone Graft and Fusion Operations for Spine.—During the last few years, Malkin has had to consider carefully what is the best method of fusing the spine. After a trial of other methods he came to the conclusion that, from a practical point of view, the method of the double graft in the vertebral grooves was the soundest, the simplest and the most generally applicable. During the last twelve months he has used it in eight cases of varying type. While it is yet too early to speak of the final results, in all cases he has found the method (sometimes slightly varied) uniformly satisfactory.

Lichen Urticatus.—Chalke states that lichen urticatus frequently bears a striking resemblance to smallpox in the distribution of its lesions. The papules often prefer the limbs to the trunk, and the extensor surfaces to the flexor. The face receives little rash in the majority of cases. The lesions themselves differ markedly from those of smallpox, and this disease may be eliminated by careful examination.

Thallium Acetate in Treatment of Ringworm of Scalp.—Ingram believes that there is no serious evidence against the use of thallium acetate in the treatment of small-spore ringworm of the scalp if the drug is properly administered. Though toxic symptoms may occasionally be encountered, they are seldom severe and the patient invariably recovers completely. There is no evidence whatever to suggest that thallium acetate affects the growth or development of the child, or effects any permanent damage to any organ. The author describes a simple method of procedure, which, it is suggested, is perfectly safe and brings the practice within the scope of the general practitioner.

Low Visceral Tone.—Carmalt-Jones describes a series of cases in which physical and emotional weakness were found, with low blood pressure, visceroptosis, and a characteristic state of the tongue; a case more closely investigated showed low metabolism in every direction. The patients were women who had been subject to long-continued anxiety, and the condition is ascribed to functional insufficiency of the suprarenals.

Journal of Laryngology and Otology, Edinburgh

47: 1-80 (Jan.) 1932

*Medical and Surgical Complications of Tonsillectomy in Childhood. J. A. Keen.—p. 1.
Physical Phenomena Occurring in Semicircular Canals During Rotatory and Thermic Stimulation. G. Schmaltz.—p. 35.
Osteomyelitis of Frontal Bone Complicating Acute Frontal Sinusitis: Recovery: Case. C. H. Johnson.—p. 63.

Tonsillectomy in Childhood.—Keen studied the case records of 9,344 children who underwent tonsillectomy at a school clinic and analyzed all the chief medical and surgical complications, excluding hemorrhage. He observed that many illnesses which appear to be complications are really intercurrent infections which arise independently during the period of convalescence or already existed in a prodromal stage at the time of operation. This applies particularly to pulmonary complications, of which there were twenty-three in this series, eight of which are described in detail. In the "guillotine" method of tonsillectomy the anesthetic is short and the operation is rapidly carried out with the head of the patient in the extended position. Therefore, it is argued, the two important factors in the etiology of pulmonary complications, viz., ether irritation of the bronchial mucous membrane and inhalation of blood or septic material, can for practical purposes be excluded. Toxemia is a direct complication and results from an extension of the bacterial infection of the operation wounds. When the body defenses break down completely, generalized sepsis or septicemia may result. Five cases of postoperative septicemia, with one death, are described. Acute specific fevers sometimes complicate the convalescence and can generally be explained as intercurrent infections not directly connected with the operation. Diphtheria is particularly serious. Three cases are described, in all of which the diphtheritic infection was laryngeal and in two of which the patient died. In this series there were eighteen cases of scarlatiniform rashes after operation and five cases in which a diagnosis of scarlet fever was made elsewhere. Septic

rashes of a scarlatiniform type after tonsillectomy are not very uncommon and they usually appear on the second or third day after operation. The diagnosis of scarlet fever is never justified under these circumstances. Acute otitis media is a definite complication of the operation. There were sixty cases in the author's series or 0.6 per cent. The prevention and treatment of earache after tonsillectomy is discussed. There were six cases of postoperative mastoid abscess and intracranial infection. These are described in detail and the pathology of fulminating meningitis following acute otitis media is considered. Lastly, a case of glottic spasm requiring laryngotomy, and a case of subcutaneous emphysema complicating the tonsil and adenoid operation, are described. The origin and mechanism of subcutaneous emphysema are described, with a consideration of the literature on the subject.

Journal of Mental Science, London

77: 669-930 (Oct.) 1931

Some Reflections on Progress of Psychiatry. R. R. Leeper.—p. 683.
Development of Cortex and Functions of Its Layers. C. U. A. Kappers.—p. 692.
Insanity and Its Relation to Parturient State. B. Solomons.—p. 701.
Mechanism of Personality. W. Burridge.—p. 708.
Studies in Experimental Psychiatry: I. Case of General Inertia. W. Stephenson.—p. 723.
Psychologic Estimation of Effects of Certain Drugs on Syntonic and Schizophrenic Psychoses. J. H. Ewen.—p. 742.
Experimental Treatments of Schizophrenia. G. de M. Rudolf.—p. 767.
Prepsychotic Schizoid: Character Study. S. M. Coleman.—p. 804.

Journal of Physiology, London

74: 1-114 (Jan. 14) 1932

*Coronary Circulation in Isolated Perfused Heart. R. Rössler and W. Pascual.—p. 1.
Latent Period of Skeletal Muscle. J. Roos.—p. 17.
*Course of Vasoconstrictor Nerves to Periphery. H. P. Gilding.—p. 34.
Observations on Time Taken for Corpuscles to Traverse Liver. J. Barcroft, Y. Nisimaru and G. B. Ray.—p. 44.
Studies on Physiology of Reproduction: I. Effect of Thymectomy and Season on Age and Weight at Puberty in Female Rat. Dorothy H. Andersen.—p. 49.
Effect of Chicago Blue and Chlorazol Blue on Clotting Time of Blood and on Ovulation in Rabbit. F. W. R. Brambell and A. S. Parkes.—p. 65.
Body Temperature in Rats on Normal and Deficient Diets: Preliminary Report. S. V. Gudjonsson.—p. 73.
Vagus Influences Giving Rise to Phenomena Accompanying Expansion and Collapse of Lungs. M. Hammouda and W. H. Wilson.—p. 81.

Coronary Circulation in Isolated Perfused Heart.—Rössler and Pascual analyzed the coronary circulation in the isolated perfused heart by means of the hot wire anemometer and discuss the chief peculiarities of this circulation. A convenient method for optical registration of the heart beat and a new method of heart perfusion are described. The statement of Hochrein and his co-workers that the coronary flow in a perfused artery is maximal during systole is not supported by the authors' experiments. The inflow is diminished by the contraction of the heart in proportion to its strength. Certain peculiarities of the coronary circulation, such as regurgitation and the overshoot, are described and analyzed. Examples are given of the action of various drugs, and it is shown how the vasomotor effect of a drug may be masked, accentuated or reversed by the action which the drug may simultaneously exercise on the heart beat.

Course of Vasoconstrictor Nerves to Periphery.—Gilding describes a method for following the distribution of the sympathetic nerves (and incidentally the motor and sensory nerves) to the tissues. The sympathetic nerves follow the motor or sensory nerves to the periphery, branching from them in the vicinity of the minute blood vessels innervated. The periarterial nerve plexus does not conduct impulses to the periphery. Stimulation of the stellate ganglion causes vasoconstriction in the skin, mucous membranes, muscles, bone, bone marrow, meninges, choroid plexus and thyroid.

Kenya and East African Medical Journal, Nairobi

8: 239-268 (Dec.) 1931

Note on Postmortem Calcium Content of Blood Serum and Cerebrospinal Fluid of East African Native. D. Harvey and F. W. Vint.—p. 240.
Treatment of Yaws and Syphilis. R. U. Gillan.—p. 246.
Observation on Anophelines and Malaria in Kitale, with Notes on Experimental Control with Paris Green. C. B. Symes.—p. 256.

Lancet, London

1: 1-64 (Jan. 2) 1932

*Diagnosis of Congenital Defects of Eye. Ida Mann.—p. 1.
*Diagnosis and Treatment of Pineal Tumors: Report of Case. W. Harris and H. Cairns.—p. 3.
*Early Diagnosis of Whooping Cough by Cough-Droplet Method, with Note on Vaccines and Their Use. A. D. Gardner and P. H. Leslie.—p. 9.
*Treatment of Acute Lobar Pneumonia by Artificial Pneumothorax. J. J. Coghlan.—p. 13.
Injection Treatment of Hemorrhoids. P. G. McEvedy.—p. 17.

Congenital Defects of Eye.—Mann states that whoever studies cases of developmental defect of the eye will be struck by the frequency with which they resemble in many ways the results of acquired disease. Conversely, many acquired conditions come to reproduce with varying accuracy the possible results of developmental aberrance. The chief interest of the subject lies in the disentangling of the appearances so as to arrive at a knowledge of the past causative agents. In most cases the problem is not an urgent one, since the more dramatic of the acquired diseases usually present no resemblance to congenital defects. Their remote results, however, may come to suggest strongly certain developmental anomalies. As good an example as any is seen in the fact that pathologic pigment on the lens capsule from past inflammatory synechiae tends after the lapse of years to assume a stellate form indistinguishable in appearance—though often not in position—from the congenital star-shaped pigment cells of minimal persistent pupillary membrane. Thus, a past attack of iritis may be misinterpreted and its possible present bearing on the case overlooked. An even more common dilemma—though likely to puzzle only the relatively inexperienced—is that of the diagnosis of medullated retinal nerve fibers from exudate due to inflammatory or vascular disturbance, especially should they occur in a patient with renal or cardiovascular disease. In dealing with this question of differential diagnosis it appears advisable to consider the commonest problems in the first place from their anatomic position. On this basis they can be divided into those involving the anterior parts of the eye and therefore visible by focal illumination, and those involving the fundus and visible only ophthalmoscopically. In some cases both situations present defects, the diagnosis thereby being rendered considerably easier, as when the presence of a doubtful pupillary membrane is made more certain by the presence of a coloboma of the disk in the same eye.

Diagnosis and Treatment of Pineal Tumors.—Harris and Cairns report the case of a youth, aged 20, with a history of four petit mal fits in four years, who complained of occasional giddiness on rising in the mornings and five months later began to have violent occipital headache. Papilledema developed rapidly, and localizing signs which were inconspicuous suggested a lesion of the posterior fossa or of the pineal gland. Cerebellar decompression was done seven months after the onset of symptoms without any tumor being found. There was rapid subsidence of papilledema with preservation of good vision, but signs of disturbance of the superior corpora quadrigemina at once began to appear. He remained well for five months but then had another attack of hydrocephalus and signs of pressure on the inferior corpora quadrigemina. At operation an apparently circumscribed pineal tumor was removed, but only after division of the right internal occipital vein near its point of entry into the vein of Galen. After operation there was on the left side hemiplegia and sensory loss which gradually recovered, and left homonymous hemianopia which remained complete. There was relief from headache and from deafness, but great unsteadiness in walking and disturbance of vision, although visual acuity was only moderately impaired. Nine months after the tumor had been removed, signs of recurrence became manifest. Under roentgen treatment there was rapid improvement, which was being maintained when the patient was last seen thirteen months after the second operation; that is, two years and seven months after the onset of symptoms.

Early Diagnosis of Whooping Cough.—Gardner and Leslie describe the bacteriologic method of diagnosis of whooping cough and report the results of more than 100 tests of suspected persons. These show that in the early stages of the disease at least three out of four cases can be detected by a single examination. The fourth eludes detection only because of human fallibility. The authors give reasons for the final

acceptance of Hemophilus pertussis as the cause of whooping cough and emphasize the desirability of using antigenically efficient cultures in the manufacture of vaccines.

Treatment of Lobar Pneumonia by Artificial Pneumothorax.—According to Coghlan, the induction of artificial pneumothorax on the affected side in acute lobar pneumonia has the advantage that it (1) separates the inflamed pleural surfaces, relieves pain and allows of easy respiration, (2) puts the inflamed lung at rest, and (3) limits the flow of blood through the pneumonic lung, thereby diminishing anoxemia and interfering with the passage of toxins into the general circulation. From the experience gained in six cases, he draws certain conclusions as to the therapeutic results obtainable, and also as to the technic to be adopted to get the best results. The first and most obvious clinical result was that the induction of artificial pneumothorax initiated a series of events almost indistinguishable from the crisis which normally occurs in this disease. The second conclusion is that this control of the pneumonic process is at first only temporary, persisting merely as long as air remains in the pleural cavity. Since the absorptive capacity of the pleura in this disease is abnormally high—a factor which had not been suspected at the beginning of the investigations—the time taken to absorb the air is a matter of hours only, after which the pneumonic process becomes reestablished at its original level. By adequate refills, however, this return of the disease can be forestalled, and when the artificial pneumothorax control has been maintained for a sufficient length of time (forty-eight hours appears to be approximately correct) the pathologic process is definitely brought to an end, the air can be absorbed without any tendency to relapse, and convalescence proceeds normally. Resolution in the successful cases occurred more rapidly than usual, probably because, as the time of the disease was shortened, there was less damage done to the lungs and less exudate formed in the alveoli than if the pneumonia had been allowed to run its full course to a natural crisis. A striking feature of all the cases was the rapidity of the onset of the artificial crisis; profuse perspiration set in almost as the pneumothorax needle was withdrawn, and cyanosis and dyspnea were relieved in about fifteen to thirty minutes at most, causing corresponding subjective improvement. The fall of temperature was well established in from two to three hours, and the patient lost that appearance of acute distress characteristic of pneumonia. The following routine is proposed by the author for average cases: 1. Preliminary medication one hour before induction with one-fourth grain (0.016 Gm.) of morphine. 2. Thorough local anesthesia with procaine hydrochloride down to and including the parietal pleura. 3. Very thorough asepsis during induction. 4. A preliminary fill of from 400 to 600 cc. of air, run in very slowly during the negative phase of the pressure swing cycle, and with the needle clipped off during the high positive phases. 5. A second fill twelve hours later of from 300 to 500 cc. of air. 6. If the pneumonic process is not completely controlled, a third fill of from 100 to 150 cc. of air, which may be given in another twelve to eighteen hours. 7. Simultaneous exhibition of a suitable diaphoretic and of Felton's serum in appropriate cases at the discretion of the operator. Owing to the profuse perspiration, the comfort of the patient is much enhanced by warm sponging as needed and nursing between blankets. In cases in which it is deemed inadvisable to provoke defervescence by crisis, and a gradual fall by lysis is aimed at, three fills of from 100 to 150 cc. at intervals of six hours might be given and further treatment judged by results. No special points with regard to after-treatment were noted. Two patients were given blow-bottles with the idea of promoting reexpansion of the lung and absorption of any residual air, but this did not seem to be really necessary or to be of any particular advantage.

Medical Journal of Australia, Sydney

2: 767-798 (Dec. 19) 1931

Human and Murine Leprosy in Tropical Australia: Preliminary Notes and Observations. R. W. Cilento and E. A. North.—p. 767.
Plants, Including Fungi, Poisonous or Otherwise Injurious to Man in Australia. J. B. Cleland.—p. 775.
Some Observations on Bendien Test for Cancer. M. Freeman, H. F. Holden, W. W. Lempriere, R. K. Scott, F. E. Williams and C. H. Kellaway.—p. 778.
Bedside Blood Sugar Estimation: A New Clinical Method. B. Hunt.—p. 782.

South Africa M. Assn. Journal, Cape Town

5: 801-836 (Dec. 26) 1931

Our Medical Association. L. Herzenberg.—p. 801.
Record of One Hundred Cases of High and Low Spinal Anesthesia. H. Goldberg-Whyte and A. Radford.—p. 806.
Fever with Some Resemblance of Typhus Fever Occurring in Port Elizabeth and District. F. H. Scroggie.—p. 809.
Laboratory Investigations of Port Elizabeth Type of Fever. F. C. Gray.—p. 814.

National Medical Journal of China, Shanghai

17: 687-812 (Dec.) 1931

Subapical Form of Incipient Pulmonary Phthisis. G. F. Bume.—p. 687.
*Scleroma: Review with Report of Case in China. C. Z. Garber.—p. 701.
Rupture of Intestine Without External Wound: Four Cases. Chang-Ken Chi.—p. 722.
Study on Food Consumption of Omnivorous and Vegetarian Rats. Kuo-Hao Lin.—p. 729.
*Coccidioidal Endophthalmitis. C. H. Chou and F. Reiss.—p. 747.
Trachoma in China: Proposals for Uniform Recording and for Uniform Statistics. A. Pillat.—p. 755.
Public Health Laboratory: Its Nature, Functions and Management. S. M. Tao.—p. 764.
Unusual Tuberculous Infection in an Infant. Case. H. J. K'ang.—p. 777.
*Relapsing Fever: Case in an Infant Aged Eight Days. Annie V. Scott.—p. 782.

Scleroma.—Garber reports an early case of scleroma. So far as he is aware, this is the first time the disease has been recorded in China. A review of the literature was made and showed among recent developments the establishment of the value of the complement fixation reaction in recognizing antibodies of the Frisch bacillus. The thionin stain is recommended as a useful stain for studying some aspects of the histology of scleroma. In agreement with the majority of writers the author finds that the "hyaline cells" are derived from plasma cells. His evidence for the origin of Mikulicz cells from connective tissue cells supports the views of the majority of others and disagrees with views held by some more recent writers. Transition forms between plasma cells and connective tissue cells have been observed. The perivascular formation of plasma cells in scleroma is dependent on the presence of mother cells closely associated with the blood vessel walls. The mother cells are not of endothelial origin.

Coccidioidal Endophthalmitis.—The first case of coccidioidal granuloma in China is described by Chou and Reiss in a girl aged 6 months. A metastatic endophthalmitis of the left eye from the primary lesion on the side of the thigh, followed by atrophy of the eyeball was observed. Cystlike double contoured bodies were found in all the lesions, and most of these bodies contained from fifteen to twenty endospores. Inoculations of pus into the rabbit, guinea-pig, and rat resulted in the death of these animals in about ten days. A typical lesion resulted from the intradermal injection of the culture in the arm of the patient and revealed the original organisms. All the lesions, including the eye condition, subsided rapidly in about one month's time after hypodermic injections of emetine hydrochloride.

Relapsing Fever.—Scott reports a case of relapsing fever, developing in an infant 8 days of age. The mother was in her initial attack of relapsing fever during labor, the first symptoms having developed two days prior to delivery. The infant probably received the infection through the umbilical blood during delivery or by transmission from the mother after birth.

Japanese J. of Obstet. and Gynecology, Kyoto

14: 478-553 (Dec.) 1931

Blood Groups in Obstetrics and Gynecology: IV. Effect of Homospecific and Heterospecific Pregnancies on Mother and Fetus. M. Oku.—p. 478.
Local Anesthesia in Cases of Uterine Operations. J. Toyoshima.—p. 485.
Cystic Kidney and Ulcus Ventriculi Complicating Pregnancy with Especial Reference to Relation Between Renal Function and Round Peptic Ulcer. M. Ikeda.—p. 489.
Weil's Disease Complicating Pregnancy. M. Oku.—p. 497.
Bacterial Toxins on Blood Vessels of Human Placenta. K. Ueda.—p. 502.
Effect of Medicaments on Fatigue of Uterine Muscle: I. On Uterus of Rabbit. H. Morimoto.—p. 508.
Investigation of Placental Ferments in Various Stages of Pregnancy. M. Abe.—p. 514.
Experimental Investigation of Hormonal Sterility, Especially Effect of Suprarenal Gland on Genital Function. J. Ogawa.—p. 521.
Endocrine Glands and Surface Tension of Blood Serum. J. Ogawa.—p. 544.

Presse Médicale, Paris

39: 1869-1884 (Dec. 19) 1931

*Eosinophilia in Malignant Tumors. M. Chiray and E. Baudouin. —p. 1869.
Pneumonoconiosis Among Asbestos Workers. A. Feil.—p. 1872.
Pathogenesis of Chronic (Lipoid) Nephrosis: Thyroid. E. Coelho and J. Rocheta.—p. 1875.
Diathermy in Treatment of Inflammatory Syndromes of Right Flank. P. Descoust and J. A. Huet.—p. 1877.

Eosinophilia in Malignant Tumors.—Chiray and Baudouin review the diseases in which eosinophilia is often observed. There is a slight and transitory eosinophilia during convalescence in infectious diseases, erysipelas, chickenpox, malaria, pneumonia, diphtheria and acute articular rheumatism. In septicemias the eosinophils are diminished during the active stage; their reappearance in all cases except those of endocarditis lenta is of favorable prognostic import. Eosinophilia is constantly present during the convalescent period of scarlet fever. From time to time an eosinophilia, possibly due to epiploitis or intestinal parasitism, is present in chronic appendicitis. Eosinophilia is noted at the end of acute attacks of tuberculosis, in the course of Addison's disease, in certain ovarian disorders and as a result of accidental or professional intoxication (hydrogen sulphide, arsphenamine, camphor, copper sulphate, benzene); in vesicular dermatoses, in foliaceous and vegetative pemphigus and in suppurations such as anthrax or phlegmons; also in anaphylactic diseases of the respiratory tract, such as asthma and hay fever. But eosinophilia does not seem to exist in attacks due to anaphylaxis of the digestive tract (urticaria, Quincke's edema, migraine) or in experimental hemoclastic crises. Only slight eosinophilia is present in skin diseases such as strophulus, eczema, herpes, psoriasis, tuberculous exanthems, lupus, erythema multiforme, sporotrichosis, mycosis and burns. Eosinophilia is important in the diagnosis of intestinal parasitism, particularly helminthiasis. It has been noted in myelogenous leukemia, in cardiac patients with asystole, in osteomalacia, and also during the course of pleural extravasations of indeterminate nature. The authors find that there is a leukocytosis and an eosinophilia in cancers, also, no matter where localized. Eosinophilia in neoplasms is only a secondary factor in the semeiology. They describe at great length a case of a febrile form of cancer of the pancreas, extending to the liver; the diagnosis was verified at operation. During the study the leukocytes went up from 7,200 to 28,000; the eosinophils increased from 19 to 41 and then to 70 and 80 per cent; the rest of the white cells were composed of lymphocytes and polymorphonuclear neutrophils, which descended from 46 to 28 and then 18 per cent. There was no anemia. The authors conclude that hyperleukocytosis in cancer is not a rare anomaly; that the leukocytosis in cancer is not neutrophilic but eosinophilic. Clinical and histologic examinations proved that the eosinophilia in the case described was directly or indirectly related to the cancer of the pancreas, to the secondary localization in the liver, or to the secondary abscess formation in the liver.

Revue de Chirurgie, Paris

50: 621-687 (Nov.) 1931

Polyposis of Rectum. M. S. Nowicki.—p. 621.
*Removal of Cervical Lymph Nodes. J. Heitz, E. Martin and P. Colson. —p. 655.
*Early Intervention in Knee Sprain. R. Leriche.—p. 678.

Removal of Cervical Lymph Nodes.—Heitz and his co-workers assert that treatment of epitheliomas of the mouth or of the upper digestive or respiratory tract should not be aimed at the primary lesion alone but ought to be preceded or followed by treatment of the cervical adenopathies usually also present but not always demonstrated on clinical examination. They consider the surgical technic, the principal characteristics of these adenopathies and the general principles that should guide treatment. The general principles that guide the surgery of cancer in general should be respected in surgery of cancerous adenopathies of the neck region. The two most important rules include, first, the removal of the whole mass *en bloc* and, second, performing a complete intervention. The authors resect the sternocleidomastoid muscle and the internal jugular vein; they consider it indispensable to keep in the muscular planes in all cervical curettages for cancerous adenopathies. The procedure for operation is always directed from the periphery toward the center (the carotid bifurcation). The description of the technic adopted by the authors during the last nine years includes, in order, the following: Incision of the teguments includes one incision that starts at the parotid depression just in front of the mastoid and extends down to the most medial part of the clavicle, half-way between the anterior and posterior borders of the sternocleidomastoid; it crosses very obliquely the direction of that muscle, coming closer to its anterior edge. A second incision starting from the chin is extended to meet the previous incision almost in the center. This incision should be made rapidly, cutting through the skin and the cutaneous muscles at once. This is followed by raising of the strips, low section of the sternocleidomastoid and the internal jugular vein, dissection of the lower carotid region and approaching the carotid bifurcation, submaxillary curettage, removal of the neoplastic mass, and drainage and suture. The authors discuss various methods and modifications and review three personal observations. In bilateral curettage, the second intervention should come from eight to fifteen days after the first. The dangers of bilateral curettage necessitate great caution: one internal jugular vein must always be conserved.

Early Intervention in Knee Sprain.—Leriche does not commend the usual caution which consists in reserving arthrotomy for the functionally grave sequelae. The factors of gravity are always present: The problem consists in knowing how to recognize, early, grave sprains from benign sprains. Grave sprains are those that are due to violent lateral distortion; those in which hemarthrosis returns rapidly after several punctures; those in which the roentgenogram taken after evacuation of the intra-articular fluid reveals a small detached bony fragment, generally at the level of the tibial spine. The author recalls (1929) five other observations besides the one he discusses in this report. In his present observation, a student presented a recurrent hemarthrosis. Intervention the eighth day after the accident resulted in the removal of a fragment as large as a hazelnut, which had become completely detached from the internal border of the patella, and three other small osteocartilaginous fragments in the articular cavity. The patient improved and returned in three months with the knee function normal.

Revue d'Orthopédie, etc., Paris

18: 649-876 (Nov.) 1931

*Vertebral Epiphysitis. P. Mocquot and J. Baumann.—p. 649.
Paralytic Patients Who Walk on All Fours. L. Michel and Arnulf. —p. 655.
Painful Lumbar Spina Bifida Occulta: Treatment by Laminectomy. E. Estor and H. Estor.—p. 664.
Congenital Unilateral Absence of Pectoral Muscles. P. Pétridis. —p. 669.
Study of Anomalies in Development of Spine. A. Reccandte.—p. 674.
Tuberculous Osteoarthritis Deformans of Elbow: Intra-Epiphyseal Graft. R. Charry.—p. 679.
Fracture of Patella in Two Stages. G. le Bourgo and J. Perves. —p. 686.
*Dislocation of Foot by External Rotation. M. Boulay.—p. 691.

Vertebral Epiphysitis.—Mocquot and Baumann describe an example of what in the literature is designated as "painful vertebral epiphysitis of adolescence." The patient was a woman, aged 19, who complained of pain in the vertebral column, localized in the lower half of the thoracic region. These pains were sometimes intense, appeared without cause, and were especially exaggerated during fatigue; they awakened the patient with nocturnal paroxysms and were so great in intensity as to render work difficult. Roentgen examination demonstrated a peculiar aspect of the eighth vertebra. In the anterior and inferior portion of the vertebra there was a defect, a loss of substance filled by a small triangular shadow which seemed to complete the vertebral body but was separated from it by a clear space with parallel borders, about 2 mm. wide, directed obliquely down and backward. A. Mouchet diagnosed this as an interesting case of painful kyphosis with persistence in one vertebra of an inferior epiphyseal point of ossification that had remained isolated and had not fused with the rest of the body. This is similar to other dystrophies of the skeleton described as epiphysitis or apophysitis. The pathogenesis is uncertain; there is no proof of an infectious character, although the symptoms are similar to some manifestations in osteomyelitis. The diagnosis of Pott's disease could not be made since there

was no definite localization of symptoms and no modification in reflex action.

Dislocation of Foot by External Rotation. — Boulay describes a case in which a man, weighing 82 Kg. (180 pounds), while carying a sack weighing 60 Kg. (132 pounds) down a stairway, twisted his left foot, its anterior face making with the leg an obtuse angle of 120 degrees. Reduction was accomplished easily under general anesthesia and the patient recovered after wearing a plaster-of-paris cast for fifteen days. The foot was doubtless dislocated by a rotation of the body carrying a heavy weight. In a vigorous man, the foot was fixed by muscular contraction and the rest of the body was twisted. The tibiofibular ligaments were certainly torn since there occurred rupture of the internal lateral ligament. The author believes this case to be an example of Huguier's dislocation.

Archivio di Patologia e Clinica Medica, Bologna

10: 375-482 (June) 1931

*Changes in the Blood and in Urinary Secretion After Introduction of Water into the Organism: Relations Between Hydremia and Urinary Secretion. G. Pellagrini.—p. 375.
*Basal Metabolism in Pulmonary Tuberculosis. G. Gherardini and G. D'Ignazio.—p. 426.
Clinical Aspects of Cancer of Lung. L. Winternitz.—p. 443.

Changes in Blood After Introduction of Water into the Organism.—Pellegrini, in studying the changes of the blood and of urinary secretion following the introduction of water by the enteral and parenteral route, in normal subjects and in subjects with edemas, observed the following facts: The parenteral introduction of physiologic solution of sodium chloride causes a dilution of the blood proportional to the relation between the quantity of water injected and the mass of the blood. In normal persons such dilution is greatest soon after the injection and decreases gradually and rapidly in from twenty-five to thirty minutes. In edemas due to diseases of the heart, the liver and the kidney, the dilution of the blood so provoked is often greater than is consistent with the quantity of water injected, owing to an afflux of water to the blood from the tissues. The duration of the dilution of the blood in edemas is notably more prolonged than normal and may last from five to six hours. The duration is longest in cases in which the water retention is more grave. With the enteral introduction of water, a dilution of the blood is induced that becomes slowly stabilized and reaches the maximum only after from twenty-five to thirty minutes, remains at the maximum for from twenty to thirty minutes, and then gradually drops down. The maximum attained is generally from 10 to 12 per cent; the total duration of the dilution is about two hours. In edemas the dilution reaches in some cases, owing to an afflux of water from the tissues, higher levels and lasts longer—more than six hours, in some cases. The duration is prolonged in cases with considerable water retention.

Basal Metabolism in Pulmonary Tuberculosis.—Gherardini and D'Ignazio, who investigated the basal metabolism in pulmonary tuberculosis, found it necessary to observe patients over a long period and to make several determinations to avoid the action of intervening factors and considering as habitual a basal exchange occasionally elevated. With this technic they confirmed the existence of increased values in the types with rapid evolution similar to the acute infections. This increase does not exist necessarily in all the forms of tuberculosis, even though they are definitely evolutive. In these cases a prolonged study enables the examiner to note the existence of constant fluctuations, which do not usually exceed the normal limit of error and which denote a peculiar instability of behavior.

Giornale di Clinica Medica, Parma

12: 1369-1448 (Dec. 30) 1931

Catatonia and Bulbocapnine. B. Spagnoli.—p. 1369.
*Behavior of Blood Catalase in Pneumonia Patients. A. Geremia. —p. 1406.

Behavior of Blood Catalase in Pneumonia Patients.—Geremia studied the behavior of the blood catalase in pneumonia patients during the height of the disease and also during defervescence. He observed an increase of the enzyme during resolution and a diminution in the fatal cases. He advances the hypothesis that the increase during the resolutive period is the expression of the cellular destructive processes through the absorption of the alveolar exudate, and that the diminution in the fatal cases is parallel to the weakening of the vital activity and to the disorganization and alveolar absorption.

Minerva Medica, Turin

2: 845-872 (Dec. 22) 1931

*Researches on Hemoglobin in Physiologic and Pathologic Conditions. G. Melli and F. Cantarutti.—p. 845.
Sulphopyretotherapy in Leukemia. G. Izar.—p. 856.
Tumor of the Middle and Posterior Cranial Fossae: Case. L. Ferrannini. —p. 860.

Research on Hemoglobin.—Melli and Cantarutti point out that a comparison of the iron and hemoglobin content of the blood and the quantity of oxygen under physiologic and pathologic conditions has shown that there is always a frank parallelism between the color of the hemoglobin and the quantity of oxygen fixed by it. Whereas in normal subjects the iron and hemoglobin values run closely parallel, the parallelism is plainly interrupted in pathologic cases. In pathologic cases it is probable that also in the adult there may be more than one type of hemoglobin; only the assumption of the existence of various hemoglobins of varying iron content will explain the observations made. It is impossible as yet to say anything in regard to the genesis and the significance of these assumed pathologic hemoglobins. Nor is it possible to say whether, under normal conditions, there is but one type of hemoglobin, or whether that which is commonly defined as such is only a mixture in fixed proportions of diverse types of hemoglobin. It is impossible to state definitely whether the variations noted under pathologic conditions are due to the appearance in the circulation of abnormal hemoglobins or simply to an altered quantitative relation between the supposed diverse normal hemoglobins.

Policlinico, Rome

39: 1-44 (Jan. 4) 1932. Practical Section

*Pneumotyphoid with Perforation of Pleural Cavity and Pyopneumothorax. V. Chini.—p. 3.
Giant Ovarian Cysts: Case. F. Benso.—p. 15.
*Staining of Microscopic Smears with an Indelible Pencil. F. Marta. —p. 18.

Pneumotyphoid with Perforation of Pleural Cavity and Pyopneumothorax.—Chini reports a case of pneumotyphoid in a woman, aged 55, which was peculiar in its mode of onset, its manifestations and its course. The transition from a state of well being to a state of disease was not sudden, and without any special manifestations or sensations. The patient stated that she thought she had had a slight fever for some time, and after a time began to complain of asthenia and anorexia; she had some attacks of dry cough, but no pain in the chest or "cold," though she had some pain in the limbs, a sense of heaviness in the epigastrium, nausea, and a slight pain in the abdomen. The temperature ranged from 37.5 to 37.8 C. (99.5 to 100 F.). The patient was treated symptomatically without benefit. Although the condition became worse, the patient continued to perform her usual duties as housekeeper. When night came, she was weary, sometimes almost exhausted. So it went on for two months, the temperature gradually rising and the gastric pain and the general fatigue and weakness increasing. Her physician sent her with a general diagnosis of "abdominal disease" to the surgical clinic. The temperature was then ranging from 39.2 to 39.7 C. (102.4 to 102.8 F.). Regarded as a patient with digestive tract involvement, she was subjected to systematic examinations of the digestive organs and their functioning. The examinations were negative, but a fluoroscopic examination of the chest revealed "a left basilar opacity," whereupon the patient was transferred to the general medical clinic. Later, it was found that a typhoid infection existed, not of the ordinary type but what may be called the "ambulatory" type, which enables the patient to continue for some time his usual occupation. But the ambulatory type is not, on that account, to be regarded as mild in comparison with the ordinary types, for, in some respects at least, it is more grave and dangerous. The virulence of the bacillus is not so great, but the disease is equally serious because the typhoid patient, not being recognized as such and not behaving as such, exhausts his physical and humoral resistance, while, at the same time, he is exposed to all the risks of an improper diet and thus to all the complications of that type of disease. This patient was an

example of that. The author in this connection recalls a notion of general pathology according to which, for microorganisms not habitually pyogenic, the rule obtains (although not constant) that the pyogenic action corresponds to an attenuation of virulence. The author's patient, having suffered from dry pleurisy at the age of 26 and a left basilar bronchitis at the age of 40, may doubtless have presented in the lung an area of lessened resistance (which was more open to an attack by the circulating bacillus). The patient made a gradual recovery.

Staining of Smears with an Indelible Pencil.—Marta recommends an indelible copying pencil (more particularly, the blue, the violet or the green) for the staining of microscopic smears, as a pencil is always at hand, does not dry out and does not deteriorate as do solutions, and does not soil the hands. The method is simple. With the point of an ordinary copying pencil he places a drop of water on the slide, next to the smear. If the pencil is left in position for a few seconds, the drop of water assumes a sufficiently heavy color, which passes over the smear and stains it instantly.

Riforma Medica, Naples

47: 1887-1920 (Dec. 14) 1931

Should Uniglandular or Pluriglandular Theory Prevail in Pathogenesis of Pancreatic Diabetes? M. Bugano.—p. 1887.
Surgical Treatment of Deformities Caused by Poliomyelitis. P. del Torto.—p. 1891.
*Calcium Gluconate in Treatment of Gonorrhea and Its Complications. B. Cartia.—p. 1892.

Calcium Gluconate in Treatment of Gonorrhea.—Cartia gave twenty-two patients with gonorrhea or several of its acute complications (acute epididymitis, acute adnexitis, acute cystitis, bilateral arthritis of the knee associated with osteoarthritis of the metatarsal region, and total, anterior or chronic urethritis) intravenous injections of from 5 to 10 cc. each of a 10 per cent solution of normal calcium gluconate. The number of injections varied from five to ten, given slowly, either daily or every other day. During the treatment, all general or local medication was discontinued. There were no untoward effects observed, with the exception of a patient who complained of a flushing sensation in his face while he was receiving the injection. In this case, after further dilution of the solution used and slower administration of the injection the redness and heat sensation of the patient's face did not appear again. Clinical and bacteriologic examinations were made in all cases for some time after the treatment was completed. The author concludes that the treatment with calcium gluconate without association with any other drug causes complete disappearance of acute gonococcal adnexitis and epididymitis, the therapeutic results of the treatment being as effective in such cases as those given by gonococcic vaccines or by protein therapy. However, the fact that calcium gluconate does not cause either local or general reactions, as do gonococcic vaccines and protein therapy, makes it preferable. The treatment may be given to ambulatory patients. Calcium gluconate has no therapeutic effect on gonococcal arthritis, cystitis and urethritis. It has, however, an analgesic action on the genital mucous membranes, which is especially favorable in cases of epididymitis and which attenuates the burning sensation during micturition in cases of cystitis or urethritis. It also diminishes the tenesmus and frequent urination coexistent with cystitis. In cases of urethritis, the urethral secretions continued without any clinical or bacteriologic modification both during and after the treatment. The treatment with calcium gluconate is ineffective in acute gonorrheal infections with localization in the genital mucous membranes. Its therapeutic effects on acute adnexitis and epididymitis may be considered as related to a specific chemotherapeutic action of the treatment on these conditions.

Cronica Médica, Valencia

35: 981-1064 (Dec. 15) 1931

*Promising Results of an Obstetric Procedure in Eighty Cases of Shoulder Presentation with Absence of Amniotic Fluid. L. Diaz.—p. 981.
Two New Modes of Palpebral Autoplasty. T. Blanco.—p. 987.
Surgery of Constipation. F. Martin Lagos.—p. 995.
Colorimetric Semimicromethods. J. Morera Arrix and V. Peset Llorca.—p. 1027.

Results of an Obstetric Procedure in Cases of Shoulder Presentation with Absence of Amniotic Fluid.—Diaz discusses the dangers inherent in this class of cases and the impossibility of performing a version without rupture of the uterus. The only alternatives have been cesarean section or embryotomy, and these interventions are not in the province of every practitioner. There remains now a new procedure to provide the uterus with the fluid medium necessary to permit version. This procedure requires a large caliber (number 25 to 29) Nélaton catheter, a 20 cc. glass syringe, a pair of uterine forceps and 1 liter of sterile physiologic solution of sodium chloride. After emptying the bladder and the rectum the patient is anesthetized and the position of the fetus verified. While the left hand steadies the fundus of the uterus, the right hand, holding the catheter between the first and the second finger, is introduced following the ventral aspect of the fetus and the catheter is left in the fundus. Uterine forceps are used to hold the catheter while the hand is pulled out only in case any difficulty is experienced in keeping the catheter in its place. Physiologic solution of sodium chloride is injected, 20 cc. at a time, until 500 cc. has been retained; the position of Trendelenburg may be resorted to, if necessary, to favor retention.

Folha Medica, Rio de Janeiro

13: 1-12 (Jan. 5) 1931. Partial Index

*Clinical Meaning of Severe Rectal Hemorrhages. R. Pitanga Santos.—p. 2.

Clinical Meaning of Severe Rectal Hemorrhages.—Pitanga Santos states that although small hemorrhages from the rectum are frequent, severe rectal hemorrhages are rare. The characteristics of one type are opposite to those of the other type. Without any previous symptom the patients are taken seriously ill with profuse perspiration, dizziness (which sometimes renders them unconscious), a marked tenesmus and an urgent necessity to defecate. Defecation does not require any effort and the evacuated material consists of large amounts of blood (both fluid blood and coagula). The elimination of massive amounts of blood is repeated at frequent intervals, so that in a few hours the patient's life is in danger if the hemorrhage is not checked. The diagnosis of this type of hemorrhage is easily made: The patient is asked to evacuate so that the rectum is free of any blood during the examination. The examination is made with a proctoscope with the patient placed in the genupectoral position. It is then discovered that the blood spurts from a large vessel ruptured in the center of an ulcer located in or near the ampulla of the rectum. The ideal treatment should be diathermic coagulation. When not available, the vessel should be clamped with a hemostat (of Kocher's type) or galvanocauterized. The author summarizes the clinical histories of four patients who had severe rectal hemorrhages. In two cases a large vessel of the hemorrhoidal venous plexus was ruptured in a chancroid of the anal canal which extended into the rectum; in the other two cases the ulcers, seat of the opened vessels, developed after trauma in one case and from a scar in the other case. None of the patients had cancer or cancerous lesions. The author calls attention to the clinical meaning of severe rectal hemorrhages, which have been considered heretofore as a clinical symptom of cancer of the rectum and which in his opinion should be regarded as a clinical symptom of ulcers of the rectum. His observations on the four patients mentioned, and on sixty-eight cases of cancer of the rectum (sixty in an advanced period and eight at the early period of development), support his opinion. Rectal hemorrhages rarely appear in cancer of the rectum or, if they do appear, they never are of a severe character. Loss of blood from hemorrhoids in patients with cancer of the rectum should not be confused with rectal hemorrhages of a cancerous origin. A clinical symptom of cancer of the rectum is a feeling of pressure of the lower part of the abdomen which appears early in the development of cancer of the rectum and is a constant complaint of the patient throughout the evolution of the disease.

Revista Médica de Barcelona

16: 537-632 (Dec.) 1931. Partial Index

*Roentgen Examination and Lavage of Seminal Vesicles in Chronic Gonorrhea. R. Campos Martin.—p. 539.

Roentgen Examination and Lavage of Seminal Vesicles in Chronic Gonorrhea.—Campos Martín states that when the clinical symptoms indicate the presence of gonococcal infection of the seminal vesicles as a complication of chronic gonorrhea, the roentgen examination of the vesicles is the most important

diagnostic method available to ascertain their pathologic condition and whether the infection is unilateral or bilateral. Some other complications of chronic gonorrhea, such as gonococcal arthritis, are secondary to the gonococcal infection of the seminal vesicles and their symptoms are conditioned by the evolution of the seminal vesicle infection. The treatment (whether medical or surgical) of gonococcal infection of the seminal vesicles depends on the patency or obstruction of the vas deferens and of the ejaculatory duct. The author describes in detail the operative technic of lavage of the seminal vesicles with a 5 per cent solution of colloidal silver, to which he resorts as a medical treatment for gonococcal infection of the seminal vesicles whenever the vas deferens and the ejaculatory duct are opened. After having produced local anesthesia of the subcutaneous cellular tissues with a 1 per cent solution of procaine hydrochloride, he makes a longitudinal incision 2 or 3 cm. in length at the root of the testis in order to approach the vas deferens, through which he injects 8 or 10 cc. of the colloidal silver solution into the seminal vesicle, seat of the infection, as previously determined by the roentgen examination. When the roentgen examination shows that the infecion is bilateral, 8 or 10 cc. of the solution is injected into each vesicle. In making the injection, the author uses a common syringe with the finest needle. After having injected the solution, he withdraws the needle and closes the incision with three horsehair sutures. The patient remains in bed for five or six days, during which he receives small doses of opium to prevent any movement of the bowels which may cause a contraction on the seminal vesicles. The retention of the colloidal silver solution in the seminal vesicles during those days acts in a mechanism of complete disinfection of the vesicles. At the seventh day the patient is given a cathartic and under the influence of the contraction of the bowels the colloidal silver is eliminated through the urine. Whenever the patency of the ducts makes possible the injection of the colloidal silver solution in the pathologic vesicle (or in both if the infection is bilateral), the symptoms of gonococcal complications such as the pain in gonococcal arthritis, the shreds in the urine, or the gleet, previously present, disappear after the treatment, simultaneously with the improvement of the seminal vesicle symptoms. When the vas deferens and the ejaculatory duct are obstructed, or when the medical treatment fails and the infection of the seminal vesicles is acute, the treatment of gonococcal infection of the seminal vesicles must be surgical. However, the treatment gave good results in the author's cases.

Salvador Médico, San Salvador

10: 3-42 (Oct.) 1931. Partial Index

*Suppurative Pericarditis Complicating Bronchopleuropulmonary Diseases. L. E. Vasquez.—p. 6.

Suppurative Pericarditis Complicating Bronchopleuropulmonary Diseases.—Vasquez states that patients with acute diseases of the respiratory tract (pneumonia, bronchopneumonia, empyema) should be subjected as a routine to a careful examination of the heart by which the presence or absence of suppurative pericarditis may be ascertained. Suppurative pericarditis is a frequent complication of bronchopulmonary diseases and develops from a propagation of a pleural effusion during the transitional period from the stage of activity of the disease to the first few days of an apparently normal convalescence. Although the clinical symptoms are almost inconspicuous at the early period of the complication, they are precise enough to make a clinical diagnosis: Roth's sign, either by itself or in association with Enart's sign, is always present; pericardial friction sounds are audible and dyspnea appears. Later on the pericardial friction sounds disappear, the dulness is generalized over the area of the heart and the dyspnea becomes so intense that the patient takes a characteristic position (the so-called sign of the pillow) frequently observed in patients with pericarditis with effusion. The sign may be described thus: The patient sits at the edge of the bed with a pillow on his lap and reclines his head on the pillow and as soon as he lies down he feels that asphyxia overcomes him. Early clinical diagnosis of this grave complication supported by roentgen diagnosis is of importance because a pericardiotomy is the only hope to save the patient's life. The operation is made with the patient in Fowler's position and with resection of a part of the fifth costal cartilage. After the purulent effusion is evacuated, a drainage tube is left in situ. Dyspnea is the first symptom that improves. The author summarizes the clinical histories of three patients, in two of whom a clinical diagnosis was made. The causative bacteria is the pneumococcus, which may be isolated from the pus of these effusions.

Semana Médica, Buenos Aires

38: 1893-1976 (Dec. 24) 1931

Modern Tendencies in the Teaching of Hygiene A. Zwanck.—p. 1893.
Gangrene of Extremities in Diabetic Patients. P. Escudero and G. Peco.—p. 1899.
Gangrene of Extremities in Nondiabetic Patients: Clinical Study. P. Escudero and G. Schultz Ortiz.—p. 1914.
Frequency of Parenchymatous Keratitis, Unilateral Argyll Robertson Pupil, Cyclitis and Glaucoma After Zona Ophthalmica. Paulina Satanowsky.—p. 1919.
Histopathology of Progressive and Symmetrical Lobar Sclerosis of Cerebral Cortex (Pick's Disease). B. A. Moyano.—p. 1921.
Sympathetic Nervous System in Gynecology. C. A. Castãno and A. Introzzi.—p. 1927.
Leprosy in Rosario. F. Carrillo, J. M. M. Fernández and S. Schujman. —p. 1932.
*Ventriculoscopy: New Method for Cerebral Symptomatology and Experimental Investigation. R. Orlando.—p. 1938.
*Endoscopy of Cerebral Ventricles. M. Balado.—p. 1942.
Local Anesthesia in Cervicosegmental Cesarean Section. D. A. Rojas. —p. 1949.
New Methods and Ideas in Obstetrics. D. E. Caravias.—p. 1955.
Affective Hypesthesia, Perversity, Epileptic Syndrome and Propensity to Lying in a Postencephalitic Patient. C. Fernandez Speroni and A. Huergo.—p. 1958.
Arterial Manometry. E. Debenedetti.—p. 1961.
Influence of Work on Daily Changes in Glycemic Curve of Diabetic Patients. F. W. Lapp and C. L. Torriani.—p. 1964.

Ventriculoscopy.—For the study of the physiology of the subcortical gray centers and the symptomatology of the cerebral ventricles, Orlando is convinced that reliable results can be obtained only when experiments are conducted under visual control. Ventriculoscopy can be done in patients with congenital hydrocephalus which will allow the introduction and necessary movements of the instrument with a minimum of trauma. The frontal and occipital ventricles and their extensions can be reached from the sagittal line, but the caudate nucleus and the thalamus must be approached through the frontal lobe. Ventriculography is first done to obtain the necessary information on the size, shape and position of the cerebral ventricles and especially of their frontal anterior horns. A point is marked 8 cm. above the superciliary arch and 1.5 cm. from the frontal suture on the side of the ventricle to be explored. A line from this point to the external auditory meatus and a horizontal line through the meatus will form an angle of about 45 degrees. Comparison of this angle with a similar one on the lateral ventriculograms will give exact indications on the direction and angle to be given to the needles and the illuminating instrument in order to penetrate the selected ventricle. With the patient prone, the chin well advanced and secured in order to immobilize the head, trepanation over the marked point is performed, the dura mater incised crosswise and a needle introduced until it reaches the ventricle, when some of the cerebrospinal fluid will escape. A second needle is introduced 3 mm. from the first one: the two needles serve as guides for the ventriculoscope, which in reality is a cystoscope of small caliber. The author describes his first attempt at ventriculoscopy in the living and its unqualified success, and he indicates the practicability of introducing electrodes through the ventriculoscope for experimental purposes.

Endoscopy of Cerebral Ventricles.—Balado points out that, as endoscopy destroys necessarily a certain amount of cerebral tissue, it should be performed through those cortical zones in which loss of tissue is of lesser importance. The endoscope must dispose of an area 1 cm. square in order to move around easily in the ventricles and should consequently be used only in hydrocephalic patients. He describes in detail the anatomic formation of the ventricles and the different structures to be observed. To perform the endoscopy of the occipital and sphenoidal ventricles, he makes a horizontal incision of 6 cm. at two fingerbreadths from the median line and two fingerbreadths above the superior occipital protuberance, trephines at the center of the incision, opens the dura mater crosswise, passes a needle into the ventricle to confirm the presence of hydrocephalus, and chooses the most avascular point for the introduction of the endoscope. He outlines the anatomic landmarks and peculiarities that present themselves to view

as he advances and turns the endoscope into the ventricle to explore it thoroughly and concludes his article with a review of the indications for endoscopy. These are (1) exploration to find anatomic lesions and to institute their treatment; (2) direct treatment of lesions situated in the ventricle: lesions of the choroid plexus, inflammatory lesions of the ventricle, catheterization of the foramen of Monro, tumors; (3) experiments on anatomic structures by electrical stimulation or extirpation. The author recommends endoscopy as a regular procedure in cerebral exploration provided the size of the ventricles allows its feasibility.

38: 1977-2048 (Dec. 31) 1931

Kidney Diseases of Infancy. M. Acuña and A. Casaubón.—p. 1977.
*Malariotherapy in Dementia Paralytica Complicated with Diabetes Mellitus. J. M. Obarrio and A. J. Petre.—p. 1989.
Fatal Serum Disease. R. F. Vaccarezza and J. Peroncini.—p. 1993.
Venous Pressure in Pulmonary Tuberculosis. C. Floriani.—p. 1995.
Pleuropulmonary Fistula with Case Report. I. R. Steinberg.—p. 2004.
*Intoxication of Pregnancy. F. A. Deluca.—p. 2008.
Dextrose-Insulin Therapy in Cardiac Insufficiency: Fundamentals, Technic and Results. M. Joselevich.—p. 2010.
Raynaud's Syndrome in a Nursling Aged 20 Months. M. H. Bortagaray. —p. 2023.
Appendicitis with Hepatic Complications. C. M. Casco.—p. 2024.
Primary Carcinoma of Appendix. O. F. Mazzini, D. Brachetto-Brian and A. Ballestrasse.—p. 2029.
Carcinoma of Lower Lip. P. Pereyra and M. Vignoles.—p. 2034.
*Jejuno-Ileac Stenosis: Roentgenographic Diagnosis. A. A. Salvati. —p. 2034.
Chronic Appendicitis with Obscure Clinical Symptoms. V. H. Locatelli. —p. 2036.
Sterilization of Lassar's Paste. A. J. Bandoni and Teresa Satriano. —p. 2040.
Fossils of Vertebrates in Maritime Layer of Upper Pliocene of Buenos Aires. C. Rusconi.—p. 2042.

Malariotherapy in Dementia Paralytica Complicated with Diabetes Mellitus.—According to Obarrio and Petre, diabetes is a rare complication of dementia paralytica and is their reason for describing the course followed in treating their patient. This man, aged 39, was given insulin adjusted to a regular stated diet and kept on it until undoubtedly balanced, when malariotherapy was instituted. After six typical malarial attacks, administration of quinine was initiated and during the attacks the patient was put on a milk diet with appropriate doses of insulin. Twice later he was reinoculated with malaria but after three and two attacks, respectively, his temperature returned to normal of its own accord. When discharged, his mental condition was considered satisfactory. The patient was readmitted to the hospital two months later suffering from the results of exaggerated doses of insulin and from renewed mental deterioration. During his second sojourn in the hospital he developed xanthodermia from the carotene pigments of spinach which he was eating twice daily, and duodenal intubation gradually reduced his glycemia. The authors conclude with the following remarks: (1) Association of diabetes with dementia paralytica is extremely rare; (2) diabetes is not a contraindication to the malariotherapy of dementia paralytica provided the necessary precautionary measures are taken; (3) specific treatment given before malariotherapy and subsequent treatment have not modified the diabetes of the patient; (4) xanthodermia was due to carotene pigment of spinach; (5) duodenal intubation has favorably modified the glycemia of the patient.

Intoxication of Pregnancy.—In 1925, Deluca concluded a study of blood groupings with the remark that eclampsia might be due to the fact that mother and child belong to different blood groups. Blood group heredity, similarity of blood grouping in monozygotic twins, and dissimilarity of blood grouping of mother and child in cases of intoxication of pregnancy have been observed by different authors. These authors think that the cause of eclampsia is to be found in the incompatibility between the blood groups of mother and fetus because the red corpuscles of the latter are agglutinated by those of the mother; this presupposes the passage of fetal blood into the maternal circulation through the placenta. Deluca agrees with Lattes and admits by extension a cellular grouping parallel to the blood grouping in which detached chorial cells (fetal albumin) pass into the maternal blood stream and produce the symptoms. Consequently intoxication of pregnancy, including eclampsia, is the result of an incompatibility of the cells of the mother and the fetus and not of their blood.

Jejuno-Ileac Stenosis.—Salvati reviews some of the anatomic peculiarities of the small intestine and their roentgenographic appearance after a barium meal and states that slowly progressive chronic stenosis of the jejuno-ileum presents the following roentgenographic characteristics: 1. Dilatation of the intestinal loops, which may become as wide as and even wider than the colon; if dilatation is found only above the stricture, the caliber becomes considerable. 2. Hydrogaseous appearance of the loops, showing a light upper and an opaque lower part; the loops are of varying shape and situated on different levels which differentiate them from those of the colon. 3. Exaggerated peristalsis. Differential diagnosis: 1. In stenosis of the colon, an opaque enema will be stopped at the constriction while an opaque meal will not be retarded in its passage through the jejuno-ileum. 2. In segmental dilatations of the small intestine, without stenosis, due to chronic mesenteritis, short, uniformly dilated loops will be found mixed up with normal ones, while in stenosis the caliber of the loops increases as they approach the constriction and there is evidence of exaggerated peristalsis. Dilatation of intestinal loops is also encountered in constitutional intestinal atony and in uncompensated cardiac diseases.

Archiv für Gynäkologie, Berlin

147: 549-855 (Dec. 22) 1931

Genital Cycle and Pregnancy in White Mice. C. Clauberg.—p. 549.
Similarity of Clinical Symptoms of Nephropathy and Eclampsia in Gravidas with Actions of Hormone of Posterior Lobe of Hypophysis. K. J. Anselmino and F. Hoffmann.—p. 597.
Demonstration of Antidiuretic Component of Hormone of Posterior Lobe of Hypophysis and of a Blood Pressure Increasing Substance in Blood in Nephropathy and Eclampsia. F. Hoffmann and K. J. Anselmino. —p. 604.
*Increase of Hormone of Posterior Lobe of Hypophysis in Blood of Gravidas and Its Relation to Type and Severity of Clinical Manifestations in Nephropathy and Eclampsia. K. J. Anselmino and F. Hoffmann.—p. 621.
Demonstration of Change of Thyroidal Hormone Content in Blood During Nephropathy and Eclampsia in Gravidas. F. Hoffmann and K. J. Anselmino.—p. 645.
Development of Nephropathy and Eclampsia of Gravidas by Hyperfunction of Posterior Lobe of Hypophysis. K. J. Anselmino and F. Hoffmann.—p. 652.
Results of Intravenous Pyelography and Roentgenologic Sufficiency Test of Vesical Ostia of Ureters in Pyelitis Gravidarum. P. Schumacher. —p. 662.
Reid Hunt's Reaction and Eclampsia: Functional Test of Thyroid. H. O. Kleine.—p. 675.
*First Observation of Neuroma in Uterine Wall. H. O. Kleine.—p. 680.
*Significance of Supernumerary Passages in Uterine Tube for Nidation in Tube. H. O. Kleine.—p. 688.
Varieties of Anastomoses Between Ovarian and Uterine Arteries. R. Joachimovits. —p. 697.
Extirpation of Uterus and Vagina in Complete Prolapse in Senility. A. I. Sserebroff.—p. 717.
Histologic Changes in Endometrioid Heterotopy During Various Phases of Menstrual Cycle. J. Schereschewsky.—p. 724.
Granulosa Cell Tumor During Childhood. J. Pahl.—p. 736.
Action of Hormones of Anterior Lobe of Hypophysis on Ovary. P. Wirz and H. Goecke.—p. 751.
Zárate's Technic of Partial Symphysiotomy. E. Zárate.—p. 759.
Stasis Infarction of Ovaries in Thrombosis of Ovarian Vein. L. Haslhofer.—p. 768.
Changes of Size, Form and Position of Pregnant Uterus. B. A. Libow.—p. 773.
Upper Urinary Passages During Pregnancy. E. A. J. M. Hanlo. —p. 797.
Etiology of Nymphomania in Cows. W. Frei.—p. 836.

Hormone of Posterior Lobe of Hypophysis in Blood of Gravidas.—Anselmino and Hoffmann determined the antidiuretic component of the hormone of the posterior lobe of the hypophysis and the blood pressure increasing substance in the blood of twenty-one gravidas with nephropathy and eclampsia. The demonstration of the antidiuretic substance was possible in nearly all cases with edema. In severe cases the quantity of the antidiuretic substance was larger than in mild cases. From twenty to thirty hours after delivery the antidiuretic substance had generally disappeared from the blood, except in one case of puerperal eclampsia. In the blood of healthy gravidas and of gravidas with dropsy, the antidiuretic substance could not be demonstrated. The authors show that there is a relation between the content of the blood in the antidiuretic substance and the severity of the clinical symptoms, for usually when an improvement was observed there was also a decrease in the antidiuretic substance. The blood pressure increasing substance was demonstrable in all cases in which the blood pressure exceeded 180 mm. of mercury. It was also observed

that the antidiuretic component of the hormone of the posterior pituitary and the blood pressure increasing substance may occur in the blood independent of each other.

Neuroma in Uterine Wall.—Kleine observed a true neuroma in the uterine wall of a woman, aged 44, who had had fifteen normal confinements. The size of the tumor exceeded that of an ostrich's egg. Besides a fibromyxochondroplastic sarcoma, the tumor contained a myelinic neuroma free from ganglion cells. The neuroma had undergone necrobiotic changes; it was in the fundus uteri, was covered by the serosa, and was separated from the sarcoma tissue by calcium strands and by myometrium tissue. In spite of the fact that mesodermal mixed tumors are usually highly malignant, the patient was free from relapse and from metastases two years after the operation.

Supernumerary Passages in Uterine Tube.—Kleine shows the significance of supernumerary passages in the uterine tube for the etiology of tubal pregnancy. The histologic studies were made on a gravid and on a nongravid tube. In both of them there were accessory passages between the main lumen and the outer surface of the tube. In the nongravid tube the accessory passage was in the pars isthmica, in the gravid tube the accessory passage reached from the pars isthmica to the proximal portion of the pars ampullaris. Noteworthy was the extensive decidual reaction in the mucous membrane of the passage accessory to the gravid oviduct. Since the abdominal ostium of this tube was closed, the invasion of the ovum must have taken place by way of the accessory passage. The author shows that the development of epithelial passages in the tubal wall is not due to a primary developmental disturbance but is the result of previous endomyosalpingitic disintegration of the tissues.

Klinische Wochenschrift, Berlin

11: 1-48 (Jan. 2) 1932

Variability and Heredity in Micro-Organisms: Significance for Medicine. V. Jollos.—p. 1.
*Iodine Content of Blood. A. Schittenhelm and B. Eisler.—p. 6.
Action of Epinephrine on Iodine Content of Blood. A. Schittenhelm and B. Eisler.—p. 9.
Thyroxine and Central Nervous System. A. Schittenhelm and B. Eisler.—p. 9.
Pigment Formation in Skin with Especial Consideration of Optic Specificity of Dopa-Oxydase. Bloch and F. Schaaf.—p. 10.
Optic Specificity of Dopa-Oxydase. S. M. Peck, H. Sobotka and J. Kahn.—p. 14.
Metabolic Action of Ovarian Extract. C. Kaufmann, C. Müller and O. Mühlbock.—p. 14.
Dangerousness of Diphtheria for Personnel of Hospitals. A. Schlossmann.—p. 18.
Disturbances of Carbohydrate Metabolism, of Acid-Base Economy and of Gas Exchange by "Avertin" Anesthesia: Its Modification by Oxygen and Carbon Dioxide Inhalation. H. Fuss and E. Derra.—p. 19.
Paroxysmal Galactosuria: Problem of Renal Elimination of Sugar. H. W. Bansi.—p. 21.
Influence of Temperature of Abdominal Cavity on Fertilization Capacity and on Motility of Spermatozoa. H. Knaus.—p. 22.
Anesthesia with "Avertin": Review of North American Literature and Personal Experiences. E. F. Goldschmidt and S. C. Harvey.—p. 23.

Iodine Content of Blood.—Schittenhelm and Eisler point out that it has been established that administration of iodine influences the activity of the thyroid. In diseases of the thyroid or in those disorders in which the thyroid is considered the causal factor, the iodine metabolism is therefore given careful attention. However, the authors emphasize that it is not necessarily the thyroid alone which regulates the iodine content of the organism; on the contrary, it has been found that the thyroidal hormone is stored in certain portions of the central nervous system, especially in the midbrain-hypophyseal system. The authors tested the iodine content of the blood in patients with exophthalmic goiter and found it increased in all patients who had not received treatment. However, they also observed that the iodine content of the blood may be increased in persons without the signs of exophthalmic goiter; namely, in persons with the signs of vegetative stigmatization. Whether in these persons the increased iodine content of the blood is of central or of sympathetic origin cannot be determined. The authors further report that tests on patients with myxedema and on those with endogenic obesity revealed a reduced iodine content of the blood. They also point out that their former studies on thyroxine and the central nervous system may be helpful in explaining cerebral obesity. They think that in order to decide whether obesity is thyrogenic it is necessary to determine the iodine content of the blood. In all other endocrinous diseases, especially in diseases of the hypophysis, the iodine content of the blood was normal. In the conclusion the authors show that the determination of the iodine content has not only a nosologic significance but also diagnostic value. They consider it more valuable than the determination of the basal metabolism, for the latter only indicates the condition of the organism as a whole, whereas the iodine content of the blood gives information about the intermediary processes. Both tests are helpful in estimating a disease condition; however, the causal genetic factor, the intermediary condition, is, especially for the diagnosis, more important than the general reaction of the organism.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

90: 1-258 (Jan.) 1932

*Histologic Evaluation of Uterine Cancer for Ray Therapy. A. Döderlein.—p. 9.
Formation of Artificial Vagina. W. Stoeckel.—p. 23.
Delivery of Primiparas with Normal Pelvis in Whom at Beginning of Labor the Head Is Still Above Pelvic Inlet. O. Pankow.—p. 33.
Technic of Extraction in Pelvic Presentation. L. Nürnberger.—p. 42.
*Simplified Improved Method of Local Anesthesia in Gynecologic Abdominal Operations. J. Frigyesi.—p. 65.
Heart Action in Early Pregnancy During Rest and After Work Tests. R. H. Schmidt.—p. 83.
Medicolegal Aspects of Operative Sterilization. A. Mayer.—p. 99.
Loss of Blood and Its Replacement. E. Holzbach.—p. 126.
Reliability of Sach's Floating Test for Recognition of Completeness of Placenta. M. Fetzer and H. Labes.—p. 140.
Methods of Examination of Childless Couples. G. L. Moench.—p. 150.
Lead of Parietal Bones as First Physiologic Sign of Spontaneous Delivery. W. Lüttge.—p. 159.
Significance of Various Sections of Spectrum for Growth and Development in Plant and Animal Life. H. Küstner.—p. 163.
Biology of Mamma. K. Heim.—p. 172.
Function of Ovaries Following Removal of Uterus. H. Siedentopf.—p. 197.
Morphologic Relations Between Corpus Luteum and Follicle Apparatus During Pregnancy. R. Börner and F. Klink.—p. 209.
Aspects of Leukocytosis During Pregnancy and Confinement. E. Fauvet.—p. 220.

Histologic Evaluation of Uterine Carcinoma for Ray Therapy.—As the first reason why he considers histologic examination of uterine carcinoma necessary, Döderlein gives the verification of the diagnosis. He himself has microscopic preparations of all cases of uterine carcinoma that came under his observation, about 4,000 in all. Thus he can always give the anatomic proof for his diagnosis. The significance of the morphologic diagnosis of cancer has also been stressed by the radiologic commission of the League of Nations. To the objection that the exploratory excision involves certain dangers, the author states that biopsy by means of the diathermic loop eliminates most of the dangers. Histologic examination is also helpful in controlling the effects of the irradiation, and it has shown the necessity of the morphologic differentiation of the various types of cancer. In discussing the different forms of cancer, the author mentions the problem of ray susceptibility. He shows that the opinions about this question differ widely. To make a correct evaluation possible, he considers it necessary that whenever ray susceptibility is discussed the technic of treatment with radioactive substances should be described in detail. To give only the number of milligram hours is not sufficient, for 100 mg. of radium element applied for twenty hours and 20 mg. applied for 100 hours both give a total of 200 milligram hours, yet there is a vast difference between the two. For whereas the first method, when applied with suitable filter and at the right distance, gives good results, the much longer application of the smaller quantity is much less effective and even harmful. For the determination of the cure of cancer the author considers histologic examination as not entirely reliable but stresses that in statistical reports only those cases should be listed as cured in which five years of observation after conclusion of the treatment has proved the absence of cancer symptoms.

Method of Local Anesthesia in Gynecologic Abdominal Operations.—Frigyesi designates his method as the lower abdominal anesthesia. The technic of this new method is almost the same as in hypogastric nerve anesthesia. The only difference is that the 30 cc. of the 0.5 per cent solution of procaine hydrochloride is deposited on the lateral surface not

of the fifth but rather of the third lumbar vertebra. After describing the technic in detail the author gives tabular reports of the 112 surgical interventions in which he employed this method; namely, in ventrifixations, in ventrifixations and appendectomies, in adnexotomies, in supravaginal amputations, in total extirpations of the uterus by means of laparotomy, in Wertheim's radical operations, in cesarean sections and in vaginal operations.

Zeitschrift für Kinderheilkunde, Berlin

52: 165-298 (Jan. 2) 1932

Blanching Phenomenon in Scarlet Fever as Immunity Phenomenon. F. von Bormann and A. Wolff-Eisner.—p. 165.
Physiology of Digestion in Nurslings. G. R. Russel.—p. 201.
Bactericidal Action of Duodenal Juice of Nurslings. W. Keller.—p. 210.
Modification of Diphtheria Antitoxin Titer by Protein Bodies. E. Lorenz.—p. 234.
*Modification of Digestibility of Cow's Milk by Addition of Diluents. W. Krane.—p. 245.
Modification of Tetanus by Intercurrent Infectious Diseases. A. Hochwald and O. Saxl.—p. 260.
Pneumococcus Infections During Childhood. M. Gundel and W. Schaefer.—p. 269.

Modification of Digestibility of Cow's Milk.—Krane examined the following milk mixtures: milk and water, milk and rice gruel, milk and coffee, milk and barley coffee, milk and black tea, milk and fennel tea, and milk with a 0.5 per cent solution of sodium citrate. In the last series of tests he also examined undiluted milk and a milk-citrate-citric acid solution. The digestibility of the milk mixtures was tested by adding hydrochloric acid pepsin solutions. The author's observations are summed up as follows: If increasing quantities of hydrochloric acid are added to the milk mixtures, the curdled protein changes into an emulsion-like substance. This change does not take place at once in the total quantity of protein, but it increases gradually with the increasing concentration of the added hydrochloric acid until the change is complete. During the change of phases in the dispersion of the milk protein, a binding of free hydrogen ions takes place and it is concluded that the chemical foundation of the process, which appears as the change of phases in the protein dispersion, is the formation of acid albumins. The most suitable diluents of milk are gruel and barley coffee. On the other hand, the digestibility of milk is unfavorably influenced by such additions as coffee and tea. The reduction in the digestibility of milk produced by them is traced to the tannin content of coffee and tea. The assertion that barley coffee is the best diluent has no foundation, since any gruel has the same favorable effect on the digestibility of milk. It is not permissible to base the estimation of the digestibility of a milk mixture merely on the form of the coagulation.

Zeitschrift für Kreislaufforschung, Dresden

24: 1-32 (Jan. 1) 1932

*Gummatous Myocarditis with Adams-Stokes Syndrome and Syphilitic Mesopulmonitis. E. Kux.—p. 1.
*Spontaneous Rupture of Heart. A. Tzankoff.—p. 12.

Gummatous Myocarditis with Adams-Stokes Syndrome and Syphilitic Mesopulmonitis.—Kux observed in a woman, aged 51, who for years had been subject to heart disease, and who had a strongly positive syphilitic reaction, the Adams-Stokes syndrome during a complete auriculoventricular dissociation with about 35 ventricular contractions per minute. The development of an Adams-Stokes attack must be traced at least partly to disturbances of the type of "block in block" since a preautomatic pause was not present, at least not during the attack that was registered on the electrocardiograph. The woman died during an Adams-Stokes attack and the necropsy revealed a gummatous endocarditis of the tricuspid valve, a partly gummatous and partly fibrous myocarditis especially of the right side of the heart, and a gummatous pulmonitis. There also existed a syphilitic mesaortitis with atherosclerosis. Histologic examination of the cardiac septum revealed that gummatous nodules and indurations had led to complete interruption of the common trunk of the bundle of His below the atrioventricular node.

Spontaneous Rupture of Heart.—Tzankoff reports the clinical histories and the results of the necropsies of three cases of spontaneous rupture of the heart. In the first two cases the rupture resulted from a coronary occlusion; in the third case it followed malignant endocarditis and aortic stenosis, the latter causing an increased pressure in the left ventricle. In a general discussion on spontaneous ruptures of the heart, the author maintains that coronary disorders are the most frequent cause. As the rarer causes of spontaneous cardiac ruptures he mentions abscesses or echinococcus cysts of the cardiac wall, syphilitic changes, carcinoma and ulcerations, which originate in the endocardium or in the pericardium, and brown atrophy of the cardiac muscle. In discussing the sites of predilection for spontaneous ruptures he states that it is more frequent in the ventricles than in the auricles, and that it occurs more often in the left ventricle than in the right one. In the left ventricle there are two sites of predilection; namely, the lower third of the anterior wall and the upper third of the posterior wall. The last named localization is much rarer than the first. The symptomatology of the spontaneous ruptures varies. In a small number of cases the premonitory symptoms are slight or entirely absent, and the rupture presents the aspects of an acute heart failure. However, in the majority of cases the patient shows for weeks or even for months the symptoms of angina pectoris. A simultaneously existing increase in temperature indicates an organic origin of the attack of angina pectoris. The author also points out that coronary thrombosis has a typical electrocardiogram, the T deflection being negative and comparatively pointed.

Zentralblatt für Chirurgie, Leipzig

59: 1-64 (Jan. 2) 1932

Habitual Dislocations: Studies on Twins. P. Blümel.—p. 9.
Diagnosis and Therapy of Cystic Liver. R. Ritter.—p. 15.
Suitable Drill for Use in Joseph's Operation for Habitual Dislocation of Shoulder. H. Köhler.—p. 24.
*New Approach to Hypogastric Plexus. J. Vorschütz.—p. 25.
*Unusual Aspect of Calcification in Thoracic Cavity. R. Hubrich.—p. 30.
Danger of Anaphylaxis Following Injection of Coli Serum. A. Peters.—p. 33.
Technic of Microscopic Examination of Vermiform Appendix. H. Junghanns.—p. 35.

New Approach to Hypogastric Plexus.—In the introduction, Vorschütz discusses the innervation of the pelvic viscera and shows that it is controlled mainly by the hypogastric plexus. By anesthetization of this plexus, pains in the pelvic organs can be counteracted, and for this reason many gynecologists conclude their operations with an injection into the region of the promontory. However, if the abdominal cavity has not been opened, it is comparatively difficult to reach the plexus. The author reviews the methods of different authorities and then describes his own procedure. He approaches the plexus from below, by way of the colon. After the colon has been thoroughly cleaned the patient lies on the left side, the legs flexed on the thighs and thighs flexed on the abdomen. The approach is by way of the incisura ischiadica. Following anesthetization of the point of puncture a nickel-plated steel needle, 14 cm. in length, is introduced between the os sacrum and the coccyx, 6.5 cm. to the right of the median line, so that it points toward the promontory. At a depth of 12 cm. the promontory is reached. When the needle point has reached the bone, it is retracted from 1 to 2 mm., and then the injection is made and the fluid spreads in all directions, also upward to the aortic plexus. In this manner all the nerves in this region are anesthetized. The author made this injection particularly in women with backache when pathologic changes were not detectable in the pelvic organs. In these usually neurotic patients, the pains could be overcome at least temporarily. However, for surgical purposes the author did not resort to this injection of the hypogastric plexus. He further discusses the anesthetization of the solar ganglion in painful conditions following extirpation of the gallbladder, and also in certain gastric pains. But since the injection effects only temporary anesthesia it is not satisfactory in painful conditions of long duration, such as tuberculosis of the bladder, or in inoperable cancers. In such cases only the permanent exclusion is effective, and the author discusses the advisability of extirpation of the plexus, citing the opinion of different authors. He concludes that temporary as well as permanent anesthesia can be produced without impairing the function of the bladder, the colon or the generative apparatus.

Unusual Aspect of Calcification in Thoracic Cavity.—Hubrich reports the case of a woman, aged 43, who was subjected to a roentgen examination prior to a goiter operation. During this examination a dense shadow was observed in the left upper portion of the thorax. Roentgenologic examination of the lung revealed that the calcification was not merely a surface and belonged neither to the anterior nor to the posterior pleura, but that it had a more spatial character and was surrounded by pulmonary tissue. The anamnesis revealed that, twenty-four years before, the woman had fallen from a ladder and after that had felt piercing pains in the left side of the chest. At that time the woman had been hospitalized for six weeks, but definite information was not obtainable about the character of the exudate at that time. The author assumes that the pulmonary injury had caused a hematoma, which led to destruction and necrosis of the pulmonary parenchyma and later to calcification. For the differentiation of this form of calcification from calcifications of pleural indurations it should be considered that, whereas the pleural calcifications appear as surfaces, the others have a more spatial character.

Zentralblatt für Gynäkologie, Leipzig

56: 1-64 (Jan. 2) 1932

*Entrance into Pelvis of Fetal Head a Not Sufficiently Considered Phase of Birth. C. J. Gauss.—p. 1.
Reduction of Dangers of Childbirth. H. Sellheim.—p. 12.
Remnants of Placenta Vessels in Uterine Mucous Membrane Obtained by Curettage. H. Beitzke.—p. 14.
Beriberi as Complication of Pregnancy and Confinement. N. J. A. F. Boerma.—p. 18.
Fatal Complications of Pregnancy with Aspects of Acute Myeloid Leukemia. K. Heim.—p. 22.
*Ulcerations on Portio Vaginalis as Sign of Disease of Blood. K. Habbe. —p. 30.
Modification of Sexual Function of Young Male Animals by Prolan. H. O. Neumann and F. Peter.—p. 34.
Fetal Peritonitis and Hydramnion. J. G. Geerling.—p. 40.
Roentgenologic Demonstration and Course of Bone Diseases in Carcinoma of Uterus. E. Philipp.—p. 45.
Specific Treatment of Chronic Gonorrhea in Women by Means of Soluble Gonococcal Toxin. K. Retzlaff.—p. 58.

Entrance into Pelvis of Fetal Head.—Gauss calls attention to what he terms the "entrance effect," that is, to that phase of labor when the head of the child, after having stood for some time above the pelvic inlet, suddenly, as with a jerk, enters the pelvis. This process involves dangers for the child, especially in case of a narrow pelvis, and during this period the control of the fetal heart sounds is of greatest significance. The author mentions the following signs as indicating that the child is in danger: prolapse of the umbilical cord, constant diminution of the fetal heart beats to less than 100 per minute or their constant increase to more than 160, marked fluctuations of more than 40 beats, great irregularity of the heart sounds, and discharge of meconium. On the basis of his observations he considers it advisable to hasten the process of delivery by employing forceps whenever the fetal heart sounds appear disturbed for some time after the fetal head has entered the pelvis. In the last part of the article he discusses the causes of the entrance effect. He is not certain whether the great pressure at the pelvic inlet or the sudden decrease in pressure after entrance into the pelvis or perhaps both factors are responsible for it, but he emphasizes the necessity of special watchfulness during this phase of birth.

Ulcerations on Portio Vaginalis as Sign of Disease of Blood.—Habbe describes the clinical history of a woman, aged 32, who during recent months had become weak and had lost in weight. She then became ill with high fever, hemorrhages of the oral mucous membrane, and ulcerations on the nose and upper lip. The physician in charge diagnosed a pneumonia and because of genital hemorrhages he thought of septic abortion and sent the woman to the clinic. The author describes the results of the general examination on admission to the clinic. Gynecologic examination revealed on the portio vaginalis bleeding and disintegrating tissue, resembling carcinoma, but the biopsy revealed that there was no tumor, but that instead of the surface covering there was only necrotic tissue. The concurrence of this necrotic process with the ulcerations on the mouth and nose and with the pneumonic process was now considered as indicative of a serious generalized disease and agranulocytosis was thought of. The examination of the blood corroborated the assumption of the existence of a disease of the blood; however, it was found that not only the leukopoiesis but also the erythropoiesis was seriously impaired. The diagnosis of septic abortion proved erroneous, for the genital hemorrhages were caused only by the ulcerations on the portio vaginalis. In the conclusion the author expresses the opinion that the ulcerative processes on the skin and mucous membranes and especially those on the portio vaginalis were symptoms of a severe generalized impairment of the hematopoietic system.

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Pathogenesis and Immunity in Infections of Air Passages (Influenza, Pneumonia). K. Lewkowicz.—p. 21.
*Experimental Smallpox Vaccination. Anna Eljasz.—p. 26.
Clinical Value and Nature of Davis Reaction. S. Brückner.—p. 30.
*Clinical Study of Hemorrhagic Diathesis (Hemophilia). A. Landau and W. Hejman.—p. 32.

Experimental Smallpox Vaccination.—Eljasz, in the macroscopic and microscopic study of changes produced by the smallpox virus in animals, found that the guinea-pig is the animal of choice for experimentation. Simultaneous epidermal and intradermal application greatly hastens the course of the disease. Histologic changes are recorded daily until all the symptoms disappear. The changes are those of simple allergy. The epidermal method produces symptoms similar to those found in human beings but the course is shorter; the intradermal method is followed by negligible changes and no degeneration of the epidermis. Both methods produce allergy.

Clinical Study of Hemorrhagic Diathesis (Hemophilia).—Landau and Hejman divide hemophilia into three distinct forms: (1) the form due to reduced coagulability, (2) the form due to reduced blood platelet count, and (3) the form due to capillary changes. The first class includes all cases of hepatic origin: icterus, tumors of the liver and biliary passages, inflammatory conditions of the bile ducts and pancreas, atrophy, and syphilitic and hypertrophic cirrhosis. The platelet type makes its appearance usually when the platelet count falls below 30,000 per cubic millimeter, regardless of the type of the primary disease. Hemophilia due to capillary changes (Henoch-Schönlein) was observed in chronic endocarditis and kidney diseases when uric acid reached above 3 Gm. per thousand cubic centimeters of blood. The authors introduce a classification of hemophilia into apparent and concealed forms. This is motivated by the fact that frequently far advanced changes do not give hemorrhagic symptoms while others with insignificant deviations from normal are marked by severe hemorrhages. The class that is attended most by hemorrhages is the vascular type, and the other two classes become apparent after the vascular system becomes impaired. The symptoms of hemophilia are in direct relation to the degree of relaxation and dilatation of capillaries.

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*Inguinal Herniotomy: Two Hundred and Thirty-Six Herniotomies Without Transplantation of Cord with After-Examination of Two Hundred and Twenty-Four Cases, Together with Remarks on Methods of Herniotomy and Results of These. J. M. Wollesen.—p. 527.

Inguinal Herniotomy.—Wollesen's statistical survey of late results after the most usual methods of herniotomy, as published in the world literature, shows the average number of relapses in indirect hernia to be 5 per cent; in direct, 15 per cent. After-examination in his 224 cases showed permanent results in 98 per cent. His method without transplantation of the cord, a combination of several methods, is applicable, he says, only in indirect hernia. The treatment of the sac and the closure of the abdominal opening are of especial importance. According to the literature those methods are most likely to give permanent results which do not disturb the muscular function of the inguinal canal and which call for suture of fascia to fascia and muscle to muscle. In direct hernia the method of choice is a plastic operation of the rectus which avoids (1) weakening the function of the abdominal muscles, (2) sewing muscle to fascia, and (3) the danger of producing a femoral hernia by traction on Poupart's ligament. Bilateral hernia should apparently not be operated on in one sitting.